SF
487
H 78 P

PRICE:
2/6
NET.

Will Hooley's

PRACTICAL

Poultry Culture.

A complete and [illegible]
Treatise on [illegible]
Culture for all [illegible]
with special chapter [illegible]
"The Intensive System."

ILLUSTRATED.

Published by
The Poultry Press, Ltd., 232, Fleet St., London, E.C.
Publishers of "The Poultry World."

S. W. Gould.
H.M.S. "Excellent".
Whale Island.
Portsmouth.

January.
1921.

ALBERT R. MANN
LIBRARY

NEW YORK STATE COLLEGES
OF
AGRICULTURE AND HOME ECONOMICS
AT
CORNELL UNIVERSITY

JAMES E. RICE
MEMORIAL
POULTRY LIBRARY

Cornell University Library
SF 487.H78P

Practical poultry culture, a complete and

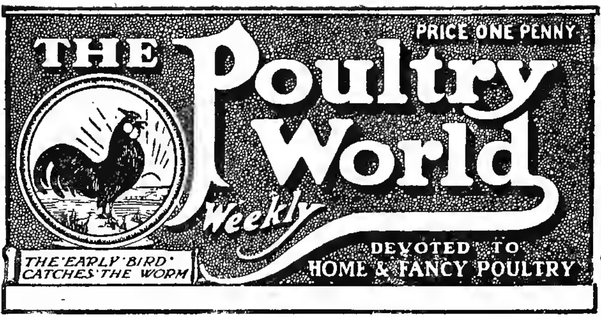
3 1924 003 193 731 mann

Cornell University Library

The original of this book is in
the Cornell University Library.

There are no known copyright restrictions in
the United States on the use of the text.

http://www.archive.org/details/cu31924003193731



PROVIDES FOR

One Penny a Week

An accurate, faithful summary of the week's happenings in poultrydom.
Detailed, reliable Reports of all the principal Poultry Shows.
Topical Hints and Practical Articles by the foremost experts on Fancy and Utility Poultry of every description.
Advice on Ailments and Matters of Difficulty lucidly and helpfully given by a most popular authority on poultry management and diseases.
Photographic Portraits of Prize-winning Poultry, also Poultry Farms, and Sketches by Leading Artists.
Frequent issues of lovely Coloured Plates and Artistic Supplements, Novelties, &c.
The Current Prices of Market Poultry and Eggs are given each week.
The Amateur Poultry Keeper is specially catered for.
A splendid assortment of Advertisements of Poultry for Sale or Wanted, Poultry Farms ditto, Situations Vacant and Wanted, Poultry for Exchange, Poultry Appliances, Remedies, Books, &c.; in fact, every want of the poultry keeper.

WE CLAIM FOR

***The* Poultry World**

THAT

It is an offshoot of the oldest poultry journal in the British Isles.
It is a fearless advocate for honesty and straightforwardness in poultry dealing and exhibiting.
It is a certain medium for sales, wants, and exchanges.

SPECIMEN COPY WITH PLEASURE FROM

The Poultry Press, Ltd., 154 Fleet St., London, E.C.

WILL HOOLEY'S

Practical

Poultry Culture

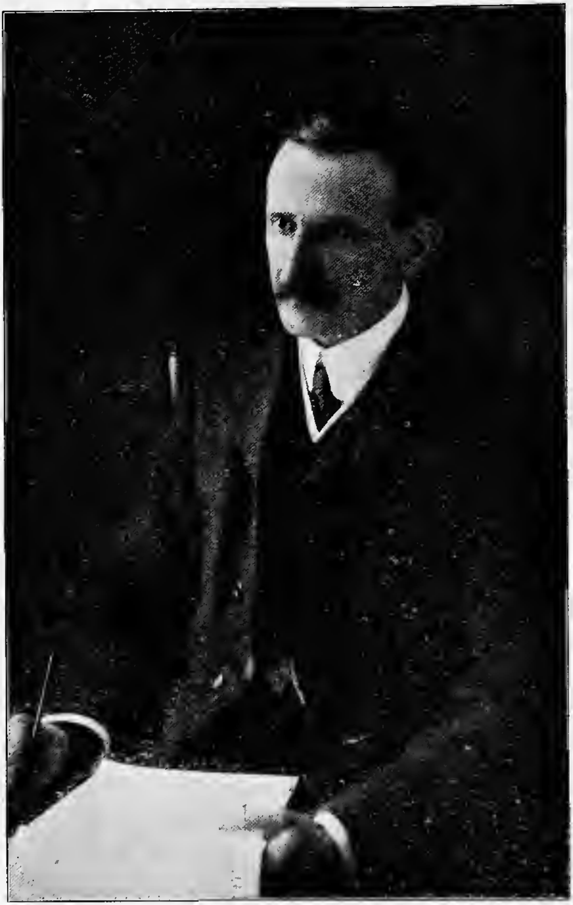
A complete and most practical treatise on Modern Poultry Culture from all points of view, dealing with Housing, Feeding, Appliances, Incubation, Rearing, Fattening, Crossing, Marketing, Ducks, Geese, Turkeys, Diseases, etc., etc., with special chapter on

"THE INTENSIVE SYSTEM."

[*ILLUSTRATED.*]

PUBLISHED BY
THE POULTRY PRESS, Ltd., 154, Fleet Street, London, E.C.
Proprietors of "THE POULTRY WORLD."

meh



WILL HOOLEY

PREFACE.

In this work I have tried to deal with the various problems of poultry keeping from a business standpoint. Poultry keeping must always be a question of conditions, and I do not advocate these methods as the *only* ones likely to be followed by success, but the principles which underlie them can be fitted to all occasions. It is recognised that every poultry farmer must have the capacity to adapt himself to local and geographical conditions, but he needs some principles to adapt, and these methods are the groundwork of this book.

From an extensive experience of poultry under many conditions, I have tried to get out the bed rock factors which conduce towards success when they are steadily adhered to, and the dietaries advised are not merely theoretical, but have been so widely practised since first I advised them that they have become almost standard dietaries up and down the country.

In this work fundamental principles have been dealt with, for to give all the details that arise from special conditions would make a work too cumbersome to be of value, but I hope that every one who uses this will be able to adapt its methods, in any case, where he cannot follow them verbatim et literatim.

WILL HOOLEY.

SF
487
H78P

CONTENTS.

E10962

CHAPTER		PAGE
I.	INTRODUCTION	7
II.	LAYING THE FOUNDATION	10
III.	HOUSING	17
IV.	APPLIANCES	25
V.	FOODS AND FEEDING	32
VI.	EXHIBITION BIRDS—THEIR TRAINING, FEEDING, ETC.	44
VII.	MATING UP THE BREEDING PEN	50
VIII.	PURE BREEDS: VARIETIES AND RACIAL CHARACTERISTICS	53
IX.	PURE BREEDS (LIGHT VARIETIES)	58
X.	PURE BREEDS (HEAVY VARIETIES)	61
XI.	NATURAL INCUBATION	65
XII.	ARTIFICIAL INCUBATION	67
XIII.	CHICKEN REARING	73
XIV.	ARTIFICIAL REARING	76
XV.	FATTENING TABLE POULTRY	82
XVI.	THE MARKETING OF PRODUCE	89
XVII.	CROSS BREEDING	91
XVIII.	BY-PRODUCTS	94
XIX.	PROFITABLE SIDE LINES	96
XX.	TRUSSING POULTRY	100
XXI.	A SPRING DAY'S WORK ON THE FARM	103
XXII.	THE MOULT	105
XXIII.	DUCKS AND DUCK FARMING	107
XXIV.	GEESE	117
XXV.	TURKEYS	122
XXVI.	DISEASES	130
XXVII.	POULTRY PARASITES	136
XXVIII.	GLOSSARY OF POULTRY FANCIERS' TERMS	138
XXIX.	THE INTENSIVE SYSTEM	146
XXX.	THE SEMI-INTENSIVE METHOD	153

CHAPTER I.

INTRODUCTION.

POULTRY CULTURE, ITS POSSIBILITIES — UTILITY— EXHIBITION — ECONOMIC PROSPECTS — THE BEST METHOD.

Poultry culture in the United Kingdom, as well as abroad, has reached a position to-day that places it in the forefront of practical business propositions. The change during the last twenty years, gradual though it has been, has none the less been drastic and far-reaching. We have passed from the theoretical Tom Tiddler's ground, where, by a simple system of calculation of so many eggs per hen, at so much per egg, less the 1½d. per week per bird for food, it could be proved that a fortune, limited only by the number of stock kept, was there for anyone to seize. We have in its place evolved a scientific system, which, given the possession of knowledge and perseverance allied to business instinct, makes the result as incontestable as the fact that two and two make four.

Much yet remains, however, to be done, and the profits that even now await the right men will be materially augmented when as complete a system of distribution is formulated as we now have of production. Hens, after all, are economic units when properly managed, and the amount of profit varies only as the manager's skill varies. The choice of locality, the choice of stock, the market to cater for, the feeding, complex in its variety according to circumstances, all these are as material as the technical knowledge of breeds and varieties, and it will be the aim of this little book to give, in as terse and practical a form as possible, advice on these matters, so that those who contemplate taking a hand in a profitable business may not fail for want of "pointers."

Poultry culture may roughly be divided into two sections, distinct yet mutually dependent, viz., the rearing of poultry as food or as food producers, and the breeding of poultry for exhibition. That the former can be made profitable is, we think, beyond question, and that the latter has been made profitable can be demonstrated beyond any doubt. It has been urged, with just that little bit of truth which is so dangerous, that the exhibitor is rapidly destroying the economic value of the breeds he takes up and that conversely it is the utility man who is going to come to the rescue. Those who argue thus are singularly unmindful of the fact that it is to the skill of the fancier that we are indebted for the valuable varieties with which the utility man is able to court fickle fortune. The exhibition pen has created a demand for a variety that the exhibition cannot in the long run supply and so the utility man breeds largely from the exhibitor's cast-offs to supply the thousand and one calls for birds of the fashion. How could, for instance, exhibitors of white Wyandottes have supplied the enormous number of birds that are now adding so materially to the egg output of England's fowls? Are there at present enough Campines bred by exhibitors to supply the ever growing demand for this laying variety? And without going to our American cousins how could the demand for Rhode Island Reds have been met unless utility breeders had set out to produce the necessary stock? Thus does our circle of prosperity become complete. The skilful breeder produces a new variety which is destined only to live so long as it is an improvement on existing breeds. It pleases the public and at once the skilful breeder reaps his reward, first by winning prizes, then by selling birds at high prices. The breed becomes widely kept and, as competition increases, fancy qualities are called for to distinguish the good from the fair, the fair from the bad.

All this selection and striving for beauty or form may tend to gradually decrease the utility qualities but the utility man has no such "fads" to work for and so he is enabled to supply for many long years the regular demand of those who know how excellent a fowl the new product is. The exhibitor will always secure his profit from the price good exhibition stock commands, while the utility man will go with the tide and reach the prosperous shores in his own barque.

Which offers the better prospects then for the poultry farmer ? The breeding merely for exhibition purposes can only be profitable when the breeder is successful, whereas the utility man is primarily dependent on the economic quality of his stock and this economic quality is secured by the proper management of proper stock. But if at any time of the year the utility man can sell either eggs or birds above the regular food price, so in proportion will his profits be enhanced.

What does this point to ? That a judicious mixing of the two phases of poultry breeding offers the greatest prospect of profitable return.

Believing this we shall endeavour to treat our subject from both aspects, and to take the uninitiated by easy stages through all the high roads and by-paths so that the complete knowledge of the world of poultry thus acquired will enable thousands of our fellow countrymen to tread with sure feet the road to success, to help themselves to the fruit by the way and to benefit their country by keeping the foreigner at bay.

CHAPTER II.

LAYING THE FOUNDATION.

LAYING THE FOUNDATION—STOCK AND ITS PRICES—THE CHOICE OF STOCK—SOILS IN RELATION TO BREED—WHAT TO STRIVE FOR—WHAT TO AVOID.

In the last chapter we spoke of the two sections—utility and exhibition—and before proceeding further it will be advisable to give a more detailed description of what the former of these sections may be said to embrace.

Utility poultry farming is not now confined, as is sometimes erroneously imagined, to the sole object of producing eggs and table fowls. These features must of course be the main object but the utility man cannot afford to neglect any legitimate side-lines that will keep his establishment at full work the whole year through, and at such work as will materially influence his turnover. Establishment charges, such as rent, labour, advertising, cost of living, are more or less fixed charges which are not materially reduced by a reduction of revenue, and are correspondingly little increased by a reasonable increase in turnover. Thus the more strings to his bow the utility man has, the more will the percentage of cost be reduced over his whole concern.

To the production of eggs and table fowls, therefore, the practical man will add the sale of stock birds of pure strains, the selling of sittings in season, and the sale of day old chicks. Neither must the by-products be ignored—the sale of feathers, the collection and proper treatment and sale of the valuable manure; in fact nothing that on the one hand will save money or on the other produce it must be left unconsidered.

How then must the poultry farmer lay the foundation of his business? He must decide what stock he will keep, and his choice must be governed (1) by the markets he will cater for, (2) the public taste and (3) the peculiarities of his location. Whatever saleable commodities he makes the bases of his business there is no reason why he should not specialise to a limited extent in a variety with which he might bring his name to public notice. It is an undoubted fact that success in only one breed, however unpopular or little known, materially increases one's chance of selling mere utility stock of the more popular varieties. Capital of course enters into the argument, and each man must cut his coat according to his cloth, but while avoiding a too lavish outlay at the commencement, he must start with as good stock as it is possible to procure. Reputation is the chief basis of success, and no man ever made a good reputation with inferior material. Varieties that are known to be good egg-producers must first be considered, then breeds that grow and fatten early and easily must be added. To these pens, one or more of the popular breeds must also be added, and discarded the instant the demand for them appears to be falling away, and finally he must launch out in one pen or more of really good exhibition stock of some variety in which there is a good prospect for him to reach somewhere near, if not actually, the top of the exhibition ladder. All this of course is the counsel of perfection, and the nearer one is able to get to it, the greater grows the immediate prospect of a lucrative business.

PURCHASE PRICE OF STOCK.

What should be paid for utility stock birds? An all-round price of 10/- per head for mature birds in their first season errs if anything on the cheap side and a little more may reasonably be paid for birds of good strain. In these days of publicity one need have no fear of getting a good article; all that is necessary is to go to breeders with a reputation, buy from them and follow in their footsteps. The price of exhibition stock is quite another matter and the following table compiled from details supplied by the leading breeders in England will give a fair idea of what one must be prepared to pay.

VALUES OF EXHIBITION STOCK.

BREED	1st Class Exhibition Cockerel	1st Class Exhibition Pullet	2nd Class Exhibition Male	2nd Class Exhibition Female	1st Class Stock Male	1st Class Stock Female	1st Class Mated Trio
Ancona	£15	£10	£6	£5	£6	£5	£15
Andalusian	15	15	6	5	4	2	6
Campine	10	8	4	3	3	2	7
Cochin, Buff	20	15	10	10	10	10	25
Dorking, Silver Grey	15	10	6	5	8	4	15
Dorking, Dark	15	10	5	4	8	3	12
Faverolles, Salmon	15	10	6	4	5	3	10
Faverolles, White	10	7	5	4	5	4	10
Game, Modern, Black Red.	15	12	6	5	10	8	20
Game, Old English	12	10	6	5	10	6	20
Hamburgh, Black	10	10	5	5	10	10	20
Hamburgh, Silver Spangled	10	10	5	5	10	10	20
Hamburgh, Gold Spangled	10	10	4	4	10	10	20
Hamburgh, Silver Pencilled	7	5	4	3	6	5	10
Hamburgh, Gold Pencilled	7	5	4	3	6	5	10
Houdan	7	5	4	3	4	3	8
Indian Game	10	10	7	7	10	10	25
Langshan, Modern	10	7	5	4	4	4	10
Langshan, Croad	8	5	4	3	3	3	8
Leghorn, White	10	10	5	4	7	5	15
Leghorn, Black	6	6	3	4	5	4	10
Leghorn, Brown	6	7	3	3	5	4	8
Minorca	15	10	7	5	7	5	12
Orpington, Black	35	25	10	6	10	5	20
Orpington, Buff	25	20	10	6	10	6	20
Orpington, White	25	15	7	5	10	7	20
Wyandotte, White	25	15	10	6	10	6	20
Wyandotte, Black	15	10	5	4	10	6	20
Wyandotte, Gold Laced	15	10	5	5	5	5	12
Wyandotte, Silver Laced	15	10	5	5	6	5	15
Wyandotte, Buff	15	8	5	4	7	5	12
Wyandotte, Partridge	25	20	10	10	10	7	20
Wyandotte, Columbian	10	6	4	4	5	3	10
Plymouth Rock, Barred	15	10	7	5	7	5	15
Plymouth Rock, Buff	10	18	6	4	7	5	15
Plymouth Rock, White	15	8	7	4	10	5	15
Rhode Island, Red	20	15	10	5	8	5	15
Sussex, All varieties	15	15	8	5	10	10	25

THE EXHIBITION SIDE.

The exhibition side of poultry farming is one that needs careful consideration, as it is a well-known fact that there are many exhibitors who are making a substantial income from exhibition poultry. It must not be inferred from this that the income is derived from the prize money won at shows, for as a rule this only just meets the cost of exhibiting, except in extreme cases. The income is derived from the sale of exhibition stock, and the breeding of it for other exhibitors, but one must win to sell. Names are not made in a day, but perseverance and appearance at shows will tell in the long run, and the advertisement which results from the inclusion of one's name in show catalogues and reports is of no mean order.

The above table shows that £2 is the lowest price for exhibition stock, and really very few birds change hands at this price; only two varieties are quoted at this figure. Against this we find that 43 varieties sell at an average price of £5, and still more impressive is the fact that 52 specimens sell at an average price of £10, 22 at £24, 17 at £15, and 9 at £20, or over. It is therefore very safe to assume then that the average of all is considerably over £2.

Every bird that is hatched is not an exhibition specimen, though it descends from exhibition parents. There are many sports, and mismarked specimens, because of the double-mating necessary in some cases to produce exhibition excellence. In double-mating only half the chickens, either the cockerels or pullets, are fit for breeding exhibition birds, yet they sell freely at from 15/- to £2, and in many cases, with the higher priced varieties, for more. An exhibitor can usually sell the wasters from his stock at 10/- and upwards, practically double the best table poultry price.

It is impossible in a work of this description to treat of all the varieties in detail. An exhibitor should always purchase a handbook on his variety, and a copy of the standard. It is also some encouragement to belong to a club which has the interests of the particular variety at heart.

CHOICE OF A BREED.

Having considered how far our capital justifies us in going, and what objects we have in view, the choice of particular breeds is one to give anxious thought. We are presuming that outside the choice of the particular variety for specialisation we are deliberating on the other varieties which shall be the real wage earners. There is more than one good laying variety as there is more than one good table bird and the final choice must have regard to the soil upon which the birds are to be kept. The following table can be safely taken as a guide :—

SOIL IN RELATION TO BREED.

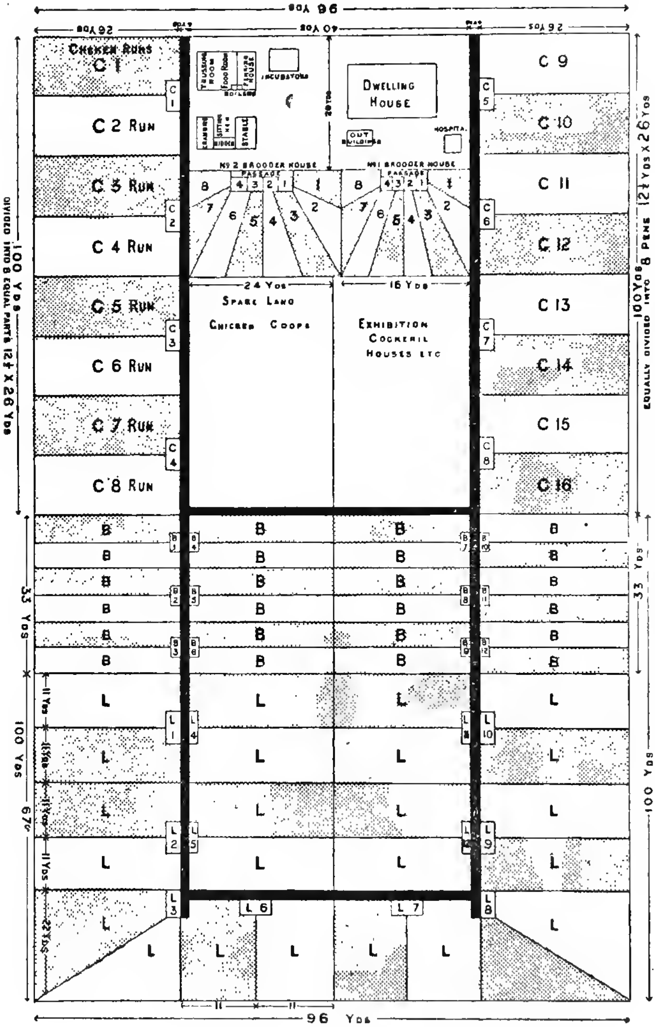
Chalky Soils	Clay Soils	Town Runs (generally Ash)	Dark Loam or Peaty Soils	Gravelly Soils	
Dorking	Wyandotte	Minorca	Langshan	Langshan	Hamburgh
Orpington	R.I. Red	Campine	Orpington Black	Minorca	Coucou de Malines
Sussex	Orpington	Polish	Wyandotte	La Bresse	Andalusian
La Bresse	Plymouth Rock	Spanish	Plymouth Rock	Houdan	Ancona
Spanish	Indian Game	Andalusian	R.I. Red	Faverolles	Silkie
Game, Old Eng.	Malay	Ancona	Campine	Campine	Cochin
Coucou de Malines		Langshan	Sumatra Game	Polish	Brahma
Silkie	Redcap			Scotch Grey	Creve Coeur
Lakenfelder	Ancona			La Fleche	Yokohama
Yokohama	Sumatra Game				

Reducing this to general terms we may say that gravelly soil suits any poultry, chalky soils are very suitable for table breeds, and that yellow legged and big boned birds do best on clay soil.

The Wyandottes we find so prevalent in the North of England are mostly on clay land, this wet, retentive soil being a great promoter of leg colour, so that all yellow-legged birds do well on clay soil. This is a case where a natural colour is indicative of some constitutional trait that enables the breed to withstand the cold and wet. Even in Utility areas, such as those around Preston the yellow-legged White Leghorn and Wyandottes are extremely popular.

The Game Fowl does not follow the soil as much as its owners. Generally speaking, the Game fowl is liked greatly by the miners, and in any mining district there are invariably a large number of Game fowls kept. Naturally, being a white-legged fowl and a table bird, we should allocate it a place on gravel or chalk if we wished to place it under the most advantageous conditions. Ireland seems to succeed with all varieties, thus proving it to be one of the finest countries in the world for poultry keeping, almost any variety of fowls can find a congenial home in Ireland. Its soil is particularly suitable for the Faverolles, Orpington, Sussex, White Wyandotte, and White Leghorn, and these breeds are eminently suitable for a country whose export trade of table poultry and eggs is only as yet in its infancy.

Finally, for what goal are we to strive, and what must we avoid ? We must have a definite programme, choose the initial stock with an eye to all the advantages and disadvantages, not outrun the constable in the early stages, and devote ourselves with patience to our set plan. We must avoid fads, and above all avoid producing that which cannot easily be sold. We must find a market that we can supply, and supply the best that we can, and do all in our power to create a demand by judiciously advertising the wares we have.



PLAN OF A MODEL POULTRY FARM OF 4 ACRES.

CHAPTER III.

ON HOUSING.

THE LAYING HOUSE—STUBBLE HOUSE—FENCING—INCUBATOR—HOUSE ETC.

PLANNING A POULTRY FARM.

In planning a poultry farm the three great essentials to keep in view are, (1) The saving of labour, (2) The provision for periodic "rests" for the land, so that it never becomes tainted. (3) Adequate provision of houses for birds of all ages, so that none are over-crowded, and young stock specially provided for.

On a small holding 4 acres or under, a good number of pens will be necessary, in order that the large number of birds to be accommodated are split up into small flocks.

A southern position is desirable. The plan is practically self-explanatory. The Incubator Room is near the house, the food room is near the water supply. The cramming plant is near the food supply and trussing room. The brooder house and chicken pens are near the house, and the birds requiring least attention the farthest off.

The incubator room should measure 10 feet square and be 8 ft. in height for every 400-egg capacity, such a room will accommodate four 100-egg machines.

The exhibition house, or "penning house" will be 15 ft. by 15. One side will accommodate a double tier of pens, about 14. On wall next the food room a skeleton bench will be erected, with a small mesh wire netting floor, over this a row of galvanised training pens, in which perches are fitted. Under the wire floor pipes will run from the boiler, so that one fire provides water to wash the fowls, and water pipes to dry them, the most approved system of fluffing. The position of boiler is marked on the plan.

The food room with its own boiler is 15 ft. square, with loft for baskets, boxes and other stores.

The plucking and trussing room may be about the same size. In this room the pressing troughs will be situated, and a cool position chosen.

The cramming shed should measure about 18 ft. by 30 ft., and will have double doors at each end, this will accommodate up to 100 birds, and having two double rows of coops in the centre with yard passages, and one row on each side the building.

The manure pit will adjoin the cramming shed, stable at opposite end.

In using the brooder house, No. 1, the first 100 chicks or part thereof will be placed in compartment No. 1, and occupy the run No. 1, the second lot will occupy No. 2, and run No. 3, and so on. It will be noticed that each compartment has two runs. In four weeks' time, the lot from No. 1 will be moved to No. 1 in brooder house No. 2. The next lot of chicks to occupy compartment No. 1 brooder house No. 1 will have the reserve run No. 2 and so on, in this way a run is occupied one month, and has one month's rest as long as in use.

From No. 2 brooder the chicks are transferred weekly to chicken run No. 1 C. No. 1 C. house, the second lot to No. 2 C. house and C. 3 run. The third lot to fresh home No. 3, and 5th C. run and so on, until all the shaded runs are occupied.

In one month's time chicks from No. 1 C. chick run are moved to chick run No. 2 C. (and number 1 remains empty until the lot from the broodery are due, i.e. in a month) from thence to either cramming or stock pens.

All through the first round of chicks, 800 or portion thereof, occupy the shaded runs, the second lot the clear runs, thus each has its periodic rest.

The breeding pens and laying hens pens are all duplicate, the mode of use being as follows. A considerable saving of housing is effected by this method.

Take any house and shed, it will be observed that the fence comes up to the middle of each house and shed and not the end. By having doors at each end either run can be reached at will.

For one year the adults use the house and shed and shaded run, the door connecting with the unshaded run being closed.

When the new stock are half grown, i.e., 16 weeks old, the door between the house and shed is closed, being good weather the adults need no shed, the young stock are accommodated with a perch along the back of the shed, and using the unshaded run. By October the old stock will be sold, and the trap-door between their run and shed will be closed, and the trap-door between the scratching shed and roost raised, and the pullets will soon resort to it, willingly suffering the disadvantages of a move, as they still occupy the unshaded run until their allotted race is run. Each run thus gets 6 months' rest in two years.

The greatest expenditure on the poultry farm will be that of housing, and it is a question that ought to be carefully considered. It is false economy to overcrowd or in any way cramp the stock, and to have the poultry house high enough for the attendant to enter easily, leads to the better performance of necessary duties. The houses should, as far as possible, be of one type for their particular purpose, and the same type should be adhered to when extensions are made. Various styles of housing are :—

1. The Dual or Combined House and Shed for a breeding pen, or for the accommodation of a team of stock birds.

For a pen of eight hens and a cockerel, the combined house should measure 6 ft. by 5 ft., the front portion being composed chiefly of wire netting to be covered with an up-and-down glass shutter. The value of this in the winter for keeping out driving rain and snow, and admitting plenty of light, cannot be over estimated.

Right along the back of the building, not more than two feet from the floor, the dropping board should be placed in slots, and 6 inches over this the perches, which should also be made moveable and fit in U shaped slots at each end of the building.

The nest boxes should be fitted to the underside of the dropping board, and capable of being entered either back or front by the birds, for many reasons they are better entered by the back, and the eggs reached out through a long flap which will cover the real back of the nests.

In other cases, on the opposite side of the house to the perches, another board is fixed which accommodates a row of trap nests, in this instance the glass window is in the bottom half of the building, and it is an admirable plan, because it leaves the whole of the floor space to be utilised as a scratching shed.

HOUSE AND SCRATCHING SHED.

On some farms, especially where effort is made to renew a large portion of the stock yearly, a house and shed in connection with a duplicate run is indispensable.

The size of the sleeping compartment should be 5 by 4 ft. and the scratching shed adjoining 8 by 5 ft. as a minimum. In this instance the nest boxes will be inside the sleeping place, in a similar position to the combined house, and the whole of the floor of the scratching shed left bare. The front of the scratching shed should be entirely wire netting protected with glass or wooden shutters with the exception of being boarded 18 inches from the floor to confine the scratching material or litter for 9 birds.

THE LAYING HOUSE.

The laying house on a farm is a fixture, this again may be of the combined house and shed principle, or may be a house fitted with a covered shed adjoining. The experience of most of the progressive poultry farmers of the day inclines to accommodate 25 to 50 birds as maximum and minimum rather than flocks of a hundred or more. As a minimum a house should be ten feet square for 25 birds. The whole of the floor space is arranged as a scratching shed by placing the nest boxes on one side of the house and the perches on the other. The window is put low down on the south side so that the light shines on the floor under the nests. In another house of this description facing south, on the right we have a row of nest boxes with the back to the light as they ought to be, fixed on a shelf two or three feet from the floor for ease of access to the attendant, and under these nest boxes are the windows which admit the light on the floor so that the birds can see the grain in the litter. On the left hand side the perches are placed underneath the dropping board which is of varying width, eighteen inches in case of one perch, and three feet in case of two perches. The perches are fitted in slots six inches above the board, and always the nearest perch should be a foot from the side of the building, and the second perch 15 to 18 inches from the first perch and both perches should be exactly level.

A shelf at one end of the building a foot or so from the floor accommodates the grit boxes and keeps it out of reach of the flying chaff and dust when the birds are indoors scratching in the winter time. These buildings are of course gabled, the door being in the middle, and the height being over the attendant's head where it is wanted, and the house should be eight feet at the ridge and six feet at the eaves. Ventilation is provided at the eaves and ridge, and in the model house the portion over the nest boxes would be wire netting protected with a close shutter, and protected on the outside by a wooden hood to prevent the rain driving in. There is nothing stiff about a house of this kind even in the depth of winter, on the other hand it is light and airy and very comfortable, and a house in which 25 birds could be kept for weeks on end if the weather compelled it, The door in the middle is usually fixed on a hinge, in other cases it is sliding on runners, an excellent plan for a windy situation. When house adjoins scratching shed it should measure 8 x 10 feet for 25 birds.

STUBBLE HOUSE.

Another type of house is the stubble house, which is indispensable to a farm of many acres. This is a substantial house on wheels, generally provided with a wooden floor for damp situations. A house eight feet by six would be a capital size for twenty-five fowls. The colony house is a similar class of house, and useful in dry situations and particularly so for boarding out a flock of half grown chickens. Whatever type of house is chosen some regard must be taken to the ventilation and houses should never be bought in which the perches are fixed midway between the trap-door which admits the birds and the ventilation or wired-in portion in front. Birds in such houses are liable to colds through roosting in a constant draught.

FENCING.

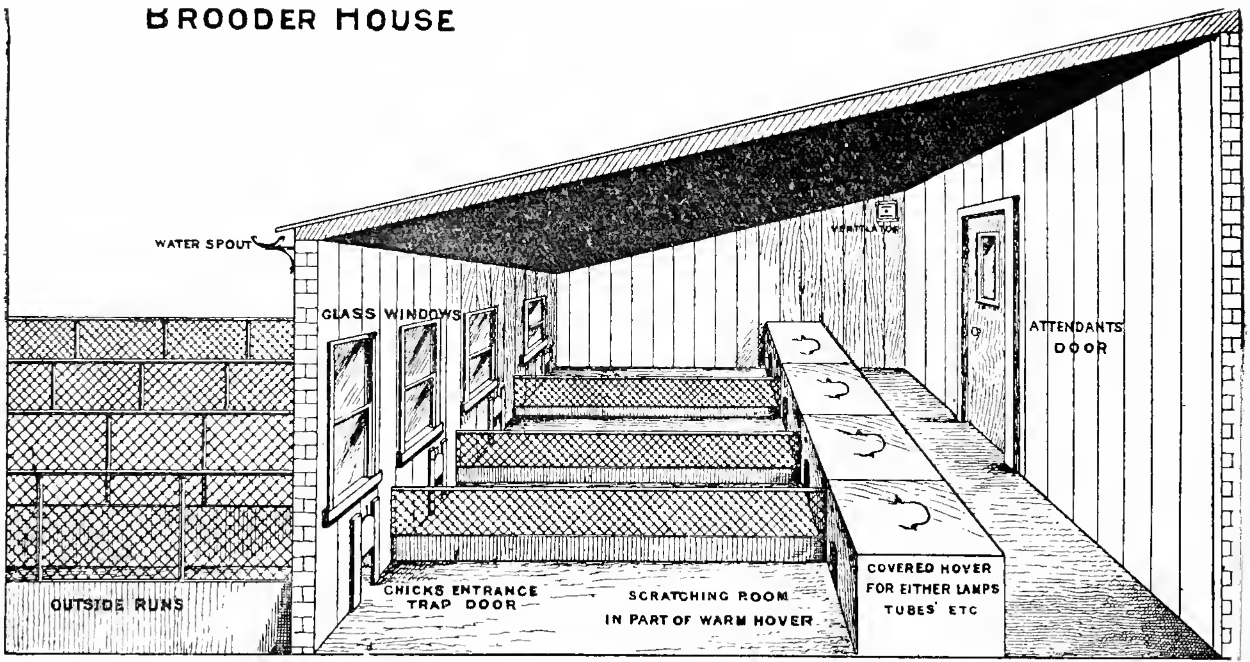
Another large item of expenditure is the fencing and the posts to carry the fencing. These should be substantial, 2 by 1½ being a useful thickness with 3 by 2 for corner posts. In order to prevent the netting sagging, there should be a post every two yards. The height of the fencing depends a great deal on the breed to be confined within its limits. In many of the big laying establishments the wire netting is not more than four feet in height but for breeding pens and light breeds a rather higher fencing is necessary. A useful fencing is one with two feet on end boarding at the bottom and four feet wire netting surmounting this. It will add to the life of the posts if they are dipped in a bucket of tar before they are used. Seven feet six inch posts will be wanted for six feet fencing, and five feet six inch posts for four feet high fencing. The netting should be tarred before being put up, this will practically double its life for it is a very messing business to tar it once it is up. The most expeditious way of tarring it is to make a wooden trough that will take a roll of netting, and fill it with hot tar and if the thick variety is used, the hotter the better.

The netting should be plunged in for twenty minutes or a quarter of an hour, and allowed to be thoroughly heated. It is then hooked out and the heat of the wire will cause the superfluous tar to drain off, and in two or three days the netting will appear as if it had had a coat of black varnish. When thin tar is used, the same method is adopted but the netting does not come away so cleanly. The netting can be placed to drain over the trough and so save waste. The houses ought to be tarred on the outside, or treated with some of the wood preservatives, and if bought ready made should be treated with preservative, as they can be done for a shilling or two more per house.

The exhibitor will find the house and scratching shed very useful, particularly the latter, as in this the windows are high and the birds can be kept in the scratching shed out of the sun, and it is really indispensable to their success in the show pen. It also comes in handy for producing the moult, as with the windows pulled up it can be got to a good temperature during July and August, and the moult can be brought on in 70 per cent of the cases.

INCUBATOR HOUSE.

The very term Incubator house implies a structure having some particular qualifications for this purpose, which is that of the accommodation of Incubators. Before describing the house, it must not be supposed that a room in an ordinary dwelling house will not answer the same purpose. In the case of a country house with spare rooms, one could be used advantageously. An Incubator room, wherever it is, should be quiet, and have a north window in preference, and be well ventilated, and where the windows have other than a north aspect, a dark green or blue blind should be provided, or sun blinds to keep out the glare of the sun, which would run the temperature of the Incubator up to a dangerous point. The floor may be either wood, stone or cement, as all three will bare a sprinkling of water during the very dry season. In selecting an out-building for an Incubator room, care should be taken in selecting one with a fairly equal temperature. Much loss comes from working an Incubator in a cold out-building, where the range of temperature from night to day is very great. The temperature of the room should not vary more than 20 degrees between mid-night and mid-day when the sun is shining, and a high room-temperature is more conducive to a successful hatch than a low one. A temperature between 60 and 70 should be aimed at. If a special Incubator house is being built, it should stand apart from the other buildings. A sheltered position should be chosen, and one in which the windows will face north. The best room is one in which you have to step down on entering it, so that it is three ft. below the ground and three ft. above it at the eaves, the ridge being at any rate 8 feet in height. Ventilation should be provided by air shafts inside the building, from under the ridge down to the floor. Both entrances should be protected by iron grating or perforated zinc to prevent the entrance of birds or mice in the shafts. Then at each end of the building just under the ridge outlets will be provided, the area of which will be the same as the inlets. The top to bottom down shaft is a reversal of the ordinary room ventilation, and we want to point this out in case it should be misunderstood. A down shaft with an aperture of 8 square feet should be allowed for every two machines of anything up to 100-egg capacity.


BROODER HOUSE
WATER SPOUT
GLASS WINDOWS
VENTILATOR
ATTENDANTS' DOOR
OUTSIDE RUNS
CHICKS ENTRANCE TRAP DOOR
SCRATCHING ROOM IN PART OF WARM HOVER
COVERED HOVER FOR EITHER LAMPS TUBES' ETC

AN UP-TO-DATE BROODER HOUSE.

CHAPTER IV.

APPLIANCES.

BROODER-HOUSES—COLONY-HOUSES—COOPS—TRAP-NESTS —BROODERS—SITTING-BOXES—REQUISITES etc.

The correct use of the appliances below-mentioned will be found in the various chapters where such appliances are used.

BROODER-HOUSE.

The term brooder-house is applied to a building in which a large number of chickens can be artificially reared. There are two types of brooder-house, one in which the brooder is heated by a tubular system of hot water pipes running over the apartments in which the chickens sleep, the pipes being filled with hot water from a tank heated by an oil stove, and fitted with outflow and return pipes.

In the second type the hover is arranged either curtain or otherwise to confine the heat and radiate it on to the chickens' backs. The hovers are made larger and larger as they recede from the lamp so that they become cooler and cooler and the chickens can be moved week by week or otherwise according to the number of apartments. A brooder house facilitates the rearing of chickens enormously, as a house 25 to 30 ft. will accommodate a thousand chickens and occupy little more time in attending to them than a single outdoor brooder with a hundred chickens.

COLONY HOUSE.

The colony house should be a substantial building as it may have to stand a good deal of weather in an outlying portion of the farm. Colony work implies keeping the birds in small flocks, perhaps 25 or 50, distributed in various convenient spots about the farm. On a two or three-hundred-acre farm it is undoubtedly the system to follow. The house should be on runners or wheels, and of suitable width to go through any gateways that will have to be encountered. Colony houses are extremely useful for camping out a lot of half-grown chickens when a field of grain or hay or other crop has been carried.

LAYING HOUSE.

A laying house is a house in which a large flock of birds, 25 to 50, are kept for laying purposes, as distinguished from those where smaller quantities of birds are kept for breeding purposes. A laying house requires the provision of more nests than an ordinary house, one nest to each four birds being the usual number.

COVERED OR SCRATCHING SHED.

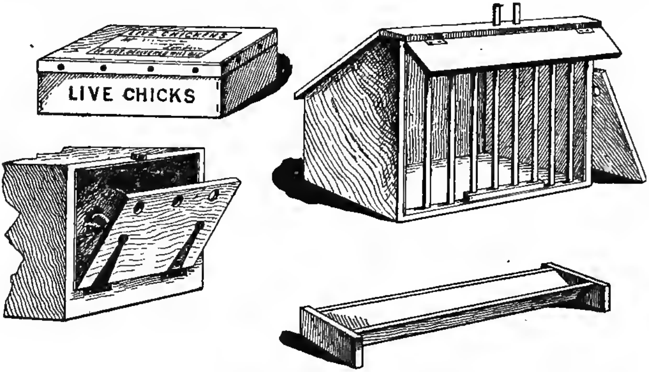
On an up-to-date farm provision is made for a covered place for the birds to scratch in during the day and to this shed the term scratching-shed or covered shed is applied. As a rule they are not wholly boarded up in front, three sides and the roof are solid, but the front is wire netting to admit as much light as possible. In very windy districts the wire netting is again covered by up-and-down closed shutters. A scratching shed is indispensable for many purposes especially for winter egg production, which it fosters to a great degree. In very bad weather birds are confined entirely to their scratching shed, which should if possible measure double the size of the house. The minimum amount of space should be 10 by 10 for each 25 birds.

STUBBLE HOUSE.

A stubble house is practically the same as a colony house and is built on wheels in the same stout fashion. The houses are taken on to the stubbles after harvest and are used for turkeys or any class of poultry. It is most suitable on a very large poultry farm.

CHICKEN COOP.

The most useful chicken coop is divided into two compartments, and should measure about 4 feet by 2, divide in the middle by a moveable partition of bars two inches in width and two inches apart, the middle bar being made to slide up and down. This screen keeps the hen to the warmest end of the compartment which is boarded all round and provided with a solid wooden door for easy access. The other part is provided with bars two inches wide and two inches apart so that the chickens can readily run through to the earth beyond. The object of this is to keep the hen in the covered part out of the wind and rain and give the chickens a little covered shed in which they can have food and drink in bad weather. Economically such a coop soon covers its cost in saving food, as a hen with liberty of both compartments soon scatters the food and upsets the water pot.



APPLIANCES.– (1) LIVE CHICK BOX; (2) BROODY BOX; (3) COOP; (4) FEEDING TROUGH.

Broody Coop. Fattening Coop.

These may be described together, as the one article answers both purposes. In length it may be three feet or a multiple of three feet, in height 18 inches. Back ends and top will be bars, the floor entirely of bars one and half inches apart and the same width, and the front of bars two inches in width and two inches apart, one or two of which should be made to slide up and down and thus serve as a door. A "V" shaped trough should be provided to run along the whole of the front to be used for fattening purposes or as a narrow shelf when it is a broody coop, so that the water pot may stand on it.

TRUSSING KNIFE.

A special trussing knife can be obtained from any ironmongers, it is a knife with very stout back that is not likely to buckle and injure the operator. It is provided with a "V" shaped point for insertion between the vertebral bones of the neck which it easily severs.

HURRICANE OR STORM LAMP.

No poultry farmer can be without this. An ordinary stable lamp provided with a guard and a very tough glass to prevent breakage is the most convenient. It can be carried about in any weather and is indispensable for night work which occurs on every farm.

TRAP NEST.

There are so many patterns of these that all cannot be described, sufficient to say that it differs from the ordinary nest in that when the hen enters, she touches some mechanism which closes the door and prevents her exit until the attendant goes round to release her, at which time he can take the number of her ring or the colour of it and credit her with the egg laid.

GALVANISED BINS.

The presence of these, or good wooden bins, on a farm are a sure indication of the thrift of the proprietor and they undoubtedly pay a good dividend, for the most wasteful form of feeding is feeding from sacks. When galvanised bins cannot be obtained, ordinary wooden bins or even apple-barrels are better than nothing, especially if tarred on the bottom and half way up the sides with a thick coat of tar and provided with a lid. Both rats and mice are averse to tar, and generally leave such bins alone.

BONE CUTTER.

This is a handy appliance for cutting up bones just as they come from the butchers, bones being one of the most nutritious forms of food. The bone cutters are made in several sizes, the small sizes to fit on a bench, larger ones already mounted on stout wooden legs. A good meat-mincing machine with cutters instead of a circular disc is a great convenience for mincing meat, green food etc., for chicken feeding. Many kinds of waste food from the house can be put through and used up.

EGG TESTER.

This is solely for the use of incubatists who, by its aid, can detect which eggs are fertile and which are not.

CRAMMING MACHINE.

There are two types of cramming machines, the one hangs on the wall, and the other is fixed to a wooden frame to wheel about between the aisles of the fattening pens. Their mode of use is given in the chapter on fattening.

WATER VESSELS.

A portable water cart is very valuable, and should be provided with very wide wheels, especially on soft, spongy, or clay land. Water vessels, out of which the birds drink, should always be earthenware, as when one has occasion to give medicine it is dangerous to use metal vessels.

COLD BROODER.

A cold brooder is a snug coop, or compartment, given over to the accommodation of chickens that have left the heated foster mother, before they are large enough to be transferred to an airy shed.

TROUGHS.

Every pen of poultry should be provided with a trough for the soft food. The ordinary V shaped wooden troughs are those most commonly used, but for many reasons earthenware troughs are preferable. Troughs are especially necessary in semi-confined runs, as soft food thrown on the grass picks up a considerable amount of dust and dirt which may be injurious to the birds. Grain thrown on the hard land is not nearly so harmful, as the birds pick it up cleanly and the dust does not stick.

TRAINING PENS.

A few galvanised training pens come in very handy on every farm whether the owner is an exhibitor or otherwise. They are very useful for a sick bird, or a makeshift place, also for a broody, or especially to put up two or three birds which may be required for sale. It enhances the value of birds to put them in a clean training-pen over night prior to the customer's arrival. They are better for handling purposes, and look larger than when running at liberty on a big run. The pens are composed of galvanised iron about 24 inches square, the front being wired and the sides top and back galvanised iron. Being metal they are readily disinfected after occupation by a sick bird.

GRIT SMASHER.

There are various forms of grit-smashers but on the whole we do not recommend the poultry farmer to spend his time smashing grit for poultry, as grit can be obtained so cheaply. The patent grit-smashers consist of an iron cylinder and an iron plunger which breaks the grit or shell, the cylinder preventing it flying about. Other patterns are iron edges provided with teeth and a small handle, also provided with teeth, between which the material is pounded. Both machines are worked by wheels and rollers through which the grit is ground to a suitable size.

OTHER SMALL APPLIANCES.

A few bundles of skewers, a whitewash brush, paint brush, oil-can, spare baskets, packets of labels and many other small things of like nature should be kept at hand.

SITTING BOXES.

These are not the nest boxes in which the hens lay, which should never be used for sitting purposes, but are separate compartments each complete in itself and about

16 inches square, or slightly larger, provided with a good shutter so that the birds can be confined to the nest and not interfered with in any way. Ranges of these are sold from four to a dozen in number and are more satisfactory than the old-fashioned method of a tea chest, a sack, and a couple of bricks, which may do for the cottage lot but not for the commercial poultry farm.

PED.

This is a specially-made light crate for packing dead poultry for market.

EGG BOXES.

Egg boxes of various designs for holding either a dozen eggs or several hundreds can be obtained ready-made. Boxes to hold a dozen are the most useful for selling odd lots or sittings. There is a separate compartment for each egg. When eggs are sent in large quantities regularly to the same customer a light box for the accommodation of a hundred or so can be obtained, as it would save much labour and the eggs arrive at their journey's end in as good condition as if each had been laboriously packed separately. Both buyer and seller have a key to these boxes and returned empty cases can be sent a great distance for about 6d.

Chapter V.

FOODS AND FEEDING

Comparative Values of Various Foods—Constituents of Foods—Constructing a Dietary—Finding a Ratio—Amount of Food, etc.

The feeding of all stock should be done with a definite object, first that of keeping the birds alive, then with the object of making a profit. In these matters the scientist is of great value to the poultry student; he tells us that some foods are most suitable for egg production, fat production, or feather production, and that whatever the effect one desires to produce, whether size, fat, length of feather, or colour of feather, it can be accentuated—or a natural tendency modified,—by the judicious selection of food stuffs.

The principal substances for poultry feeding can be divided into cereal or grains, the pulse or leguminous seeds, of which peas and beans are a sample, animal foods, which are fish, meat, grub life, and vegetables and grasses. Other foods are waste products from these or combinations of them. The poultry man will be well equipped on all points if he obtains an analysis of any food he uses and sees how it compares with the foods enumerated in our tables and the price he is paying for it. The dearest foods are those containing most albumen, so it is of importance to get them at the lowest possible rate. All foods contain one or more elements, and the success of feeding any live stock lies in the right selection of the elements likely to produce the desired results. The white of an egg, for instance, is albumen, therefore it is natural to select foods rich in albumen to produce eggs.

For the purpose of the poultry farmer we divide foods into five great heads.

Albumen	Carbo Hydrates	Fats	Water	Ash, or
Proteid	Starch	Hydro		Mineral
Nitrogen	Amylaceous	Carbon		Matter

You will observe there are several names for these elements, and as they are confusing to the learner, we use the most common. Albumen builds up muscles and tissue, renews and rebuilds the system, and is an egg and flesh forming material.

CARBO HYDRATES, FATS, ETC.

The body is practically a furnace and is constantly burning something, a slow combustion stove. One of the cheapest forms of fuel is starch, which is a heat producer. We cannot say it is indispensable to the upkeep of the fowl's body because albumen could be burnt as fuel, but that it is an expensive food and it would not be wise to try and keep up bodily heat on albumen alone, as it entails much strain on the organs that have to deal with it. Carbo hydrates in excess are fattening because they more than balance the requirements of the body and the surplus can be stored up as fat to such extent as to become a disease. This must be borne in mind.

FATS.

These are the highest form of heat producers, consequently are the best fuel, but are often dearer than starch. If one pound of starch is worth 1d. for heat production, one pound of fat is worth 2¼d. Supposing the amount of fat in a food to be four, the scientist would quote it as 4 x 2¼=9. Therefore a food with 4 parts fat to the 100 is really represented by 9—when compiling a dietary.

FIBRE.

This is generally in the sheath or husk of the grain, and is only digestible to a slight degree, although more digestible with some animals than others. A food containing an excessive amount of fibre is therefore a wasteful food to buy, yet some is necessary to provide bulk in the food to enable the bowels to carry out their work properly.

ASH.

The remaining factor is ash or mineral matter containing salts, potassium salts, magnesia, calcium, phosphates, bone, earth and soda, all necessary to the life and the growth of sturdy chickens and to egg production.

Therefore *Albuminolds* are *Tissue Producers*
Carbo Hydrates are *Heat and Force Producers.*
Salts and Mineral Matter are necessary to formation of *Bone, Salts, Muscle, Juice* and *Blood Corpuscles.*

CONSTRUCTING A DIETARY.

The proper construction of a dietary is a matter that can only be determined by each individual, (or by an expert for him) who will take into consideration the natural food in the herbage or in the soil in the shape of grub life of every description, and economically from the waste products that can be used. However, the analytical table shows what most common things are composed of, and from this a dietary can be compiled to suit any conditions. In these days of progress one can see how a scientist determines how much of one ingredient should be used to balance another, and this is termed balancing a dietary or finding its nutritive value, or ratio. For example, if we take one part albumen and four parts carbo hydrates and nothing else, it is obvious that the ratio is one to four, one part albumen and four carbo hydrates, and it has been found by experiments that a bird when laying requires an average diet of 1 to 4½ and when it is not laying the diet may be 1 to 6 or 1 to 7. It has also been found that what will produce eggs will produce a chicken, so that the ratio for chicken rearing is approximately the same as for egg production.

FINDING A RATIO.

In order to find out the rate of any ratio of any food or combination of foods, the following rule is to be observed. We learn that fat is 2¼ times as heat-producing as carbo hydrates, therefore we multiply fats by 2¼, taking as instance Indian corn:

Albumen	Carbo	Fat
10. 3	70. 4	5

5 multiplied by 2¼=11¼ add this to the carbo hyd. 70.4
equals 70.4
11.1.

81.5.÷10.3 (Albumen) equals 1 to 8

Therefore the nutritive ratio of Indian corn is practically 1 to 8 and a mixture of any grains or meals can be made by carrying on the same formula, adding up the total figures under each heading, and multiplying or dividing as indicated, but observing that when there are two parts of any material multiply by two or if only a quarter part is taken divide by four. When one part of any food stuff is used, the numbers may stand as in the scale, but when four parts are taken the numbers must be multiplied by 4, or if half a part is taken, the numbers must be divided by 2. This ensures a just proportion of the food elements of the whole ration. Water, ash and fibre may practically be neglected, although necessary to anybody compiling scientific or unusual menus.

Taking then a day's rations from the menu sheet.—

MORNING FEED—WINTER.

Part or lb.	Water	Ash	Albumen	Fibre	Carbo Hydrates	Fat
1 Wheat Bran ..	11.9	5.8	15.4	9.0	53.9	4.0
1 Biscuit Meal ..	6.4	4.5	12.0	3.1	64.0	10.0
½ Clover Hay ..	10.5	8.0	5.3	12.2	16.5	1.9
2 Middlings ..	24.2	6.6	31.2	9.2	120.8	8.0
MIDDAY FEED NO.						
½ Beef Offal or Horse Flesh	34.1	0.6	10.2			5.0
EVENING FEED						
1 Oats ..	22.0	6.0	23.6	19.0	119.4	10.0
2 Maize ..	21.2	3.0	20.6	4.4	140.8	10.0
Total constituents of day's diet	130.3	34.5	118.3	56.9	515.4	48.9

To get the ratio, multiply fat by 2¼ for reason explained.

Fat 48.9 by 2¼ (i.e. 2.25) .. 48.9
2.25
2445
978
978
110.025
Add Carbo Hydrates from above table .. 515.4
Divide by albumen 118.3) 625.4 (5.2
591.5
3390
2366

The Albumenoid ratio is thus 5.2 to 1 or practically 1 in 5 leaving the decimals at the first place.

THE SUMMER RATION IS AS FOLLOWS.

MORNING FEED.	Water	Ash	Albumen	Fibre	Carbo Hydrates	Fat
4 Wheat	42.0	7.2	47.6	7.2	287.6	9.8
1 Peas (White)	14.0	2.6	20.2	14.4	51.1	1.2
NO MIDDAY FEED	—	—	—	—	—	—
EVENING FEED						
Oats	11.0	3.0	11.8	9.5	59.7	5.0
Wheat	10.5	1.8	11.9	1.8	71.9	2.7
	77.5	14.6	91.5	32.9	471.3	18.7

Multiply the fat by 2¼ 18.7 by 2.25 18.7
2.25
935
374
374
42.075
As before add Carbo Hydrates 471.3
Divide by Albumenoids .. 91.5) 513.375 (5.6
4575
5587

It will be noticed that the winter rations ratio is 1 to 5.2, and the summer rations ratio 1 to 5.6, and the question, why the latter should not be narrower, may be asked. The reason is that fowls on a grass range obtain grub life, insect matter and seeds, which, could they be calculated, would form a much narrower ration, than the one shewn, but there is no need to supply the albumenoids which the birds can obtain naturally, so that, viewed in this light, and noting the decreased amount of fat, (less than half) in the summer diet, fat not being required in hot weather, the diet is seen as the most practical for its purpose in each case. A diet changed half yearly is sufficient.

There is another way of arriving more quickly at the albumenoid ratio of several foods when the separate ratio has once been found. In the above method, it is only necessary to have the analyses of any foods to be able to combine them into a ratio.

The second way of working is—taking for instance the wheat and peas mixture—wheat 4 parts, peas 1 part; the wheat which has a ratio of 1 in 6 is multiplied by 4 since
4 parts are taken ... ... 1—6 x 4 4—24
Add 1 part peas ... ... 1—1 1—2
That is 5 parts to 26 parts, or to bring it to its lowest figures,
divide by the 5 5) 26
5.1 to 1

That leaves us with a ratio of 1 albumen in 5 carbo hydrates.

SPECIMEN RATIONS.

Morning.			Mid-day.		Evening.	
Parts or Weights	Soft food or grain.	Weight per Bird	Animal food or grain	Weight per Bird	Grain	Weight per Bird
1 4 1	FARMER'S FOWLS, SUMMER Wheat White Peas	1 oz.	No midday meal		Oats Wheat Alternately	2 ozs.
2 1 1 ½ 2	WINTER. Bran Biscuit Meal Clover Hay (See note) Middlings or ground Oats	2 ozs.	Cooked meat or fresh cut bone in frosty weather, otherwise nothing	1 oz.	Oats and Maize alternately.	2 ozs.

Morning.			Mid-day.		Evening.	
Parts or Weight	Soft food or grain	Weight per Bird	Animal food or grain	Weight per Bird	Grain	Weight per Bird
	IN CONFINED OR SEMI-CONFINED RUNS SUMMER. *1st. day.* Soft food as above	2 ozs.	Mixture of 1 part Wheat 1 part Peas, Green food or sprouted Oats.	1 oz.	Wheat or Buckwheat.	2 ozs.
 4 1	*Alternate day.* Wheat Peas	2 ozs.	Animal food green food, or sprouted Oats.	½ oz.	Oats	2 ozs.
3 1 1 2 1	WINTER. No. 2 or, Bran Peameal House Scraps Cooked vegetables	2 ozs.	Green food ad. lib. Meat (1st. day) Canadian Peas. (2nd. day.)	½ oz. ½ oz.	Oats Maize	2 ozs. 2 ozs.
4 1 ½ 2	BANTAMS. SUMMER. Biscuit Meal Fish Meal Oatmeal or middlings		Green food. Few shreds of meat or split Peas		Wheat	
  3 1 ½	ON GRASS RUNS. Manitoba Wheat Broken Peas Canary To be given in turn with soft food until eggs are coming in		Nothing.		Wheat	

Morning.			Mid-day.		Evening.	
Parts or Weight	Soft food or grain	Weight per Bird	Animal food or grain	Weight per Bird	Grain	Weight per Bird
5	DUCKS.		Oats or Wheat			
2	Bran		Split Maize (in drinking water)		Grain or No. 5 with 25% grain added	
2	Biscuit Meal					
2	Oatmeal					
2	Middlings		Green food (Small quantity only of Grain)			
1	Maize					
1	Meat or Fish					
	Grit 10%					
	Vegetables 25%					
	BREEDING STOCK Feb. to May					
4	Cooked vegetables	2 ozs.	Cooked Meat	¼ oz.	Oats	2 ozs.
4	Middlings					
1	Oatmeal					
	OR					
1	Bran	2 ozs.	Fresh cut bone	½ oz.	Oats	2 ozs.
½	Clover					
1	Biscuit Meal					
2	Oatmeal					

NOTES

Fish, meal, or other poultry food having a high percentage of albumen may be used in place of Biscuit Meal.

Clover hay is short cut clover hay, cut to ⅛ and ¼ inch lengths and scalded before use.

When bran is used, the practice of scalding it and pouring the warm liquor over it and the biscuit meal or other food is to be recommended.

GRIT.

In all cases this will be supplied ad. lib. from a trough. It should be kept under cover, as it is liable to freeze and be useless just when the birds desire it most, i.e. in frosty weather.

In wintry weather ½oz. of hemp seed may be given in addition to other grains, especially if lean meat is given, it is not necessary when cut bone is given, as cut bone is rich in fat.

Broadly speaking, there are two classes of birds the poultry farmer has to deal with, stock birds, and birds kept for egg-production. The latter may be kept on the colony or in confined runs, and the stock birds are generally kept in still smaller pens, wrongly so, because the more exercise and freedom stock birds have, the better the results will be at hatching time.

For birds in semi-confined runs kept for egg production a liberal allowance of soft food and animal food is necessary during the winter months when grub life is absent. Unless this supply is made up, the poultry keeper cannot expect good results.

AMOUNT OF FOOD.

The amount of food varies with the size of the birds. The light breeds do not take so much as the heavy breeds and the time of the year also alters matters, so that fowls should not be given stated weights of food all the year round. The man who has ability to adjust the amount of food to his conditions, and weather, and economise when possible, gets the best results from his stock. As a rough average, it is advisable to start with 2 ozs. of food per bird when mixed with water, and the same amount of grain at night and about half an ounce of meat at midday, decreasing these quantities in summer or increasing them in winter as necessary.

To find whether a fowl is getting enough food in winter the state of the crop at 10 p.m. should be ascertained. It ought to contain a substantial amount of food at that hour otherwise more should be given. To find whether they are too fat a few should be handled individually as a criterion for the rest, and if they are gaining weight, the food supply should be curtailed somewhat, if they are in good health, but if thin and not laying, they require a little more. Oats are perhaps the bulkiest of grains, and 1½ lbs. would be equivalent in bulk to 2 lbs, of other grains. Allowance should be made for this in the amounts given.

The importance of a pure water supply is very great. Ordinary precautions should be taken to keep the well or other source from contamination such as lead or other poisonous matters. Sometimes a bird or small animal getting in will cause poisons to arise. If there is any choice, water with a slight trace of iron in it is the best, and hard water is advantageous to poultry: soft or rain water ranking last. A very free water supply is necessary.

Grit is also mentioned in chapters on soil, but with very few exceptions, on every farm a supply of grit is necessary, the hard, many-sided flint being one of the most economical forms of mill stone that can be given. It is a common error to think that the giving of oyster shell is sufficient; one can manage with it, but it is a poor substitute, and, for vigorous digestion, hard flint grit is best. Oyster shell and cockle-shell are two common sources of lime for shell formation, consisting chiefly of phosphates and carbonate of lime.

To explain the object of giving grit, it is necessary to know something of the gizzard where the grit is deposited. In this large muscular organ a rythmic contraction is constantly going on, which presses the grit hard against any substance that comes between it, in the same way as if the grit is placed between the palms of the hands and they are rubbed together. In this way much indigestible matter which a bird swallows is triturated or reduced to fine powder, thus allowing the digestive juices to extract as much nutriment as they can, which is more than in case of many animals.

SHELL GRIT, OYSTER SHELL, ETC.

An eggshell contains 110 grains of lime, which is a small amount, and one lb. of shell grit will make shell for over 50 eggs, therefore 4 lbs. per annum would supply enough formation of shells required for 200 eggs, leaving the lime in the food for other uses.

SALT.

Chloride of sodium is an important constituent of the blood and gastric juices. A good quantity of this is found in the foods, but those who like to give extra should allow a tablespoonful to each hundred birds and it should be dissolved in the water with which food is mixed, not put in dry, or some birds may get too much, which sometimes proves fatal

ANALYSIS OF FOODS.

	Water	Ash	Albumen	Fibre	Carbo-Hydrates	Fat	Albuminoid Ratio
Alfalfa or Lucerne	71.8	2.7	4.8	7.4	12.3	1.0	1 to 3
Barley ..	10.9	2.4	12.4	2.7	69.8	1.8	1 to 6
Barley Meal	11.9	2.6	10.5	6.5	66.3	2.2	1 to 6
Buckwheat	12.6	2.0	10.0	8.7	64.5	2.2	1 to 7
Beans ..	13.5	3.0	25.5	10.0	46.5	1.5	1 to 2
Carrots ..	88.0	1.0	1.0	1.3	7.6	0.4	1 to 8
Clover Hay	21.0	16.1	10.7	24.5	33.6	3.9	1 to 4
Cabbage ..	90.5	1.4	2.4	1.5	3.8	0.4	1 to 2
Cut Bone ..	29.7	24.0	20.2			26.1	1 to 3
Dari ..	12.5	1.3	10.0	3.3	68.0	4.0	1 to 6
Dried Meat	5.4	2.4	58.4			33.8	1 to 1
Egg ..	73.7	0.8	15.0			10.5	1 to 1
Green Oats	62.2	2.5	3.4	11.2	19.3	1.4	1 to 6
Grains (wet)	76.0	1.2	4.9	5.3	10.7	1.7	1 to 3
,, (dry)	9.5	4.7	20.6	15.9	42.3	7.0	1 to 2
Hempseed			10.0		45.0	21.0	1 to 9
Horse Flesh	74.3	1.4	21.7			2.6	1 to 0
Indian Corn	10.6	1.5	10.3	2.2	70.4	5.0	1 to 8
Indian Meal	15.0	1.4	9.2	1.9	68.7	3.8	1 to 8
Lentils ..	14.0		23.0		53.0	1.5	1 to 2
Linseed ..	9.2	5.7	32.9	8.9	35.4	7.0	1 to 1½
Malt Culms	10.2	5.7	23.2	10.7	48.5	1.7	1 to 2

	Water	Ash	Albumen	Fibre	Carbo-hydrates	Fat	Albuminoid Ratio
Milk ..	87.2	0.7	3.6		4.8	3.7	
Millet ..	14.0	3.3	11.8	9.5	57.4	4.0	1 to 5½
Oats ..	11.0	3.0	11.8	9.5	59.7	5.0	1 to 6
Oatmeal ..	7.9	2.0	14.7	0.2	67.4	7.1	1 to 5½
Potatoes ..	78.9	1.0	2.1	0.6	17.3	0.1	1 to 8
Peas ..	14.0	2.6	20.2	14.4	51.1	1.2	1 to 2
Pea Meal ..	10.3	2.5	23.0	10.0	48.5	2.0	1 to 2
Rye Grass ..	80.0	2.0	4.1	4.0	9.7	0.8	1 to 2
Rye ..	11.6	1.9	10.6	1.7	72.5	1.7	1 to 7
Rice ..	11.4	0.4	7.6	0.2	79.2	0.4	1 to 10
Sunflower ..	8.6	2.6	16.3	29.9	21.4	21.0	1 to 4
Skim Milk ..	90.4	0.7	3.3		4.7	0.9	1 to 2
Turnip ..	90.5	0.8	1.1	1.2	6.2	0.2	1 to 6
Wheat ..	10.5	1.8	11.9	1.8	71.9	2.7	1 to 6
Wheat Bran	11.9	5.8	15.4	9.0	53.9	4.0	1 to 4
Middlings ..	12.1	3.3	15.6	4.6	60.4	4.0	1 to 4
Screenings ..	11.6	2.9	12.5	1.7	65.1	3.0	1 to 5

In working out the albuminoid ratio we have left the decimals at the first place, which seems sufficient for the practical poultry keeper.

Special attention might be drawn to the apparently favourable analysis of some foods such as cabbage, which to anyone who has not gone deeply into the matter, might seem to be as albumenous as the concentrated foods such as meat, but we have to bear in mind their extraordinary bulk or the tremendous amount of water they contain, which although it makes them very suitable as dilutents of concentrated foods, makes them impossible of use as the sole article of food, and cabbage (as an instance), although it may have a proportion of albumen and carbo-hydrates, which compares favourably with dried meat, etc., would have to be taken in much greater bulk to get that proportion.

CHAPTER VI.

EXHIBITION BIRDS:—THEIR TRAINING, FEEDING ETC.

REARING—FEEDING—TRAINING—THE BIRDS' TOILET—WASHING—SHOWING ETC.

When chickens are from four and a half to five months old their diet should be carefully considered, for at that age new feathers begin to grow. At that age they should be carefully shielded from the sun's rays by being kept in a cockerel or exhibition house during the day and allowed out when the sun is off the pen. This shade is the secret of success. Given a roomy shed in which to exercise, or a small exhibition pen which could be moved daily to fresh grass, they could be kept in perfect health and colour, and a buff could be exhibited without a wash if carefully housed in this manner. In the case of a buff or black fowl use a little broken maize as part of the grain diet, or a small portion of maize meal as part of the soft food diet. Smaller breeds such as Hamburgs and Bantams have to be treated with other methods, and a little hemp seed in the diet or buck wheat is better than maize or maize meal. The mistake should not be made of giving it too early in their career. It is better reserved until the tail begins to grow, as this is the greatest strain, and once begun should be persevered with until the growth of the tail is complete. This refers more especially to cockerels of these varieties. Game fowls being required hard-feathered and not too large, birds should now be fed entirely on grain. A judicious mixture of 3 parts wheat and 1 of peas, or 3 parts oats and 1 of peas should be given. A good many have yet to learn the value of peas for producing hardness of feather, and birds do not take to them readily unless they are given them as chickens. For producing a large comb three things are necessary, first, an hereditary disposition to it, second, a sufficient amount of animal food, third, heat. Meat, cut bone, and peas are rich albuminous food, and promote large fleshy combs, and consequently should be used very sparingly for small combed varieties. Incidentally chickens should not be given comb-developing foods until bodily growth is somewhere near the standard weight. A low building or one with a glass roof has a great effect in producing large combs, and small combed birds should, for the exactly opposite reason, not be kept in such habitations.

FEEDING FOWLS FOR EXHIBITION.

The plumage of fowls is affected very largely by feeding, in fact a fowl is practically what it eats, and certain foods affect the colour of the feathers. What might improve the plumage of buff fowls would be ruinous in the case of white fowls. For this reason one could give maize to a buff with advantage, as maize undoubtedly effects leg colour to a marked degree, but it would not be wise to give it to a White Orpington in which white legs are desired, and there is a tendency on the part of poultry fanciers with white birds with yellow legs to avoid the use of maize, and sacrifice a little leg colour for the purity of the body colour. Those foods which darken the plumage, increase the gloss, help the sheen and lustre of feathers, also promote length of feather, and increase the intensity of yellow legs, are maize, or maize meal, hemp seed, linseed, cotton-seed cake, meat and cut bone. Those which have a bleaching effect on the skin, and which on account of their not affecting the purity of the white, could be given to all white birds, are oats and oatmeal, middlings, sunflower seed, barley meal, wheat, dari, biscuit meal, pea meal, Rice and milk promote hardness of feather. Small hard Manitoba wheat, red wheat, buckwheat, split white peas and oats, produce hardness and shortness of the ear. This is the reason why a bantam is reared principally on wheat or wheat and split peas, and why a bird like a White Orpington is given plenty of milk or bread and milk oatmeal and milk oats, etc., and why a black, buff, or barred fowl is given maize and maize meal and hempseed etc., in addition to the biscuit meal, oatmeal etc.

TRAINING FOR SHOW.

On every poultry farm there should be a few spare training pens, as wire pens used at shows are termed. The bird that is to be exhibited should be taught to show itself to its best advantage in the pen. They are best taken off the perch at night and put in one of these pens, in which they should spend a few hours every day until the show. At first the bird will sulk and should be coaxed to come to the front of the pen by being given bits of dainties, such as meat or bread from the attendant's hand through the bars of the cage. Having arrived at this stage of confidence, the bars of the cage door should be lifted and the bird stroked with the hands and placed sideways, and made to stand so that so that he will show his profile or outline in the best manner, encouraging it to stand well up on its legs and keep its head and tail up, a most trying task with a wild bird. It should be then trained to stand at the front of the cage, and if it is a Modern Game Bantam, either big or little, it should be taught to stretch up to its fullest height by holding a grain or two of corn in the hand, and having been taught to do this with the hands, repeat the performance with a cane or judging stick, until the bird is quite used to being turned round and put in position by a touch of the stick alone. By stroking down and putting into position needed, they soon learn to connect the two things, consequently when the judge comes round they know exactly what to do and keep well up to the front of the pen, and so showing themselves off, which a bird hiding its head in the back of a pen could not do, neither has a judge the time or the ability to value a bird that will not stand properly in a show pen.

THE TOILET OF EXHIBITION POULTRY.

The toilet of exhibition poultry should always be a simple matter, any means of faking are not advocated, for in the long run they lead to trouble with the authorities. In the case of a light delicate-coloured bird the shortest way to show condition is to wash it entirely, the modus operandi being as follows. One of the best methods for washing a white fowl is to have three or four large water vessels in which to immerse the bird. Warm water should be placed in them, the first rather the warmest. The birds should be well soaked in the first, and then lathered. A good many fanciers use white curd soap, others use soap in flakes. The point is to obtain a soap that will lather freely in the water you have to use. The lather should be worked right to the roots of the feathers, and the bird should be lathered and re-lathered until the lather comes off snowy in its whiteness. The bird should now be placed in the second bath, after absorbing as much of the lather from its feathers as possible. After rinsing in No. 2 bath, rinse in No. 3, as one cannot be too particular in getting all the lather out. The fourth water should be tepid. Add a small amount of blue. After this the bird should be dried in a "fluffing pen" or in front of a bright fire in an exhibition pen, or in an open-fronted basket, putting something at the back of the bird to keep out the draught that there always is just in front of a fire. The same wash will answer for all light birds. In the case of Buffs do not use blue.

HOW TO ENTER A BIRD FOR SHOW.

To enter a bird for show, first of all it is necessary to send to the show secretary for a schedule and entrance form, as rules differ with various shows.

The greatest care should be taken to fill in the particulars correctly, as the price on an entrance form is a contract binding on the owner of the bird, so that if he offers a £10 for 10/- and it is claimed at that price he will have to forfeit it.

A bird in a selling class is obliged to be sold at the price stated. Thus the owner would only receive £2 for a bird in a £2 selling class, however much it would make by auction in the event of two claimants. It is inadvisable to enter a bird in the selling class if the owner is not wishful of selling it. In the case of a £3 or £5 limit, whatever the birds may be sold for, the owner of the bird does not receive more than the stated £3 or £5 or whatever it may be.

HANDLING A FOWL.

In taking a fowl from an exhibition pen, the hand should be placed over the back and the right wing grasped, the left hand takes the opposite side with the thumbs crossed meeting across the back, and with the fingers under the breast, the bird is lifted carefully from the pen.

When handling a fowl for examination purposes or sale the bird should never be held by the legs with the head downwards, but taken hold of by the hocks with the left hand, the forefingers between the shanks close to the hock, the second finger just below the hock, and the thumb in the hollow above both hocks. This keeps the legs stiff or locked and if the other hand is placed over the breast of the bird, it can be rolled over in any position without struggling or ruffling a feather.

WASHING LEGS AND HEAD.

Take a match and sharpen the end, or a penknife with a rather blunt point, and carefully scrape as much of the sand and dirt from under the scales of the legs as possible. In the case of an old bird the top scales are sometimes loose and will come off by being bent between the fingers and thumb the real scales must not be removed. In a bird under 12 months old the scales will not be loose, but after 18 months there is generally a second lot which comes about the time the bird moults, and it is after then that the top scales require removing if they have not been shed naturally. Then wash the legs of the bird, dip them in hot water, not too hot, and when they are well soaked take an ordinary nail brush and rub some soap on it and then give the legs a vigorous scrubbing, allowing the soap to go well under the scales, then rinse, dry and polish with a piece of roughish flannel, applying before polishing just a small amount of vaseline or pure olive oil. Add nothing in the way of colouring matter to the legs, the oil and the flannel will put a brilliant gloss on any legs. Pour the water away and, in some fresh water, wash the head. Take no notice of the feathers at the top of the head, they must get wet and will dry all right, and i. wet when the bird is put in a basket, will be dry before the bird reaches the show. Wash well in warm water, using a soft nail brush to thoroughly cleanse from dirt, and when quite clean rinse carefully, dry, and annoint with a little olive oil, vaseline, or glycerine Birds that have white lobes should not have any soap put on, just sponge the lobes with tepid water and milk until clean, then dry and dab with a little violet powder. In getting birds up for show one can use zinc ointment daily for the lobes for a week or two prior to exhibition, but use nothing but powder the day the bird goes to the show. Dark plumaged birds such as Black Orpingtons, Black Hamburgs, or Langshans are rarely washed for show. In the case of any dark plumaged birds take a bowl or tepid water and a large sponge, just sponge the feathers from head to tail, making no attempt to wet the bird to the skin. Having slightly damped them, dry with a soft towel and afterwards with a big old silk handkerchief, and by careful rubbing the most brilliant gloss or sheen can be obtained. This part of the toilet should always be performed last.

CHAPTER VII.

MATING UP THE BREEDING PEN

SELECTING THE STOCK BIRDS—FOUNDING A STRAIN—MATING ETC.

AGE OF STOCK BIRDS, MATING.

A suitable male bird to head the breeding pen would be one that is full of life and vitality, crows vigorously, is always busy scratching, and in constant attendance on the hens. The best of hens and pullets are those that have not an undue weight of fat in abdomen, that are always alert, busy scratching about all day, bright in comb, and not thick heavy-looking about the head. The number of hens to a cockerel depends on the strength and vitality of the cockerel As a rule eight hens to a cockerel for utility breeding, which means hatching about March.

For exhibition purposes, a cockerel to three or four hens or pullets from November to March, when another three or four may be allowed. When a two-year-old or older male is mated up, two or three mates should be the limit until the end of March, when two more may be allowed Some two-year-old birds are as vigorous as cockerels, if so give more mates.

Also allow more mates if the pullets or hens become very bare of feathers on back, whatever age, or whatever number the male may already have. A cockerel with two-year-old hens, if they are likely to lay early enough is generally the best mating. A cockerel (10 to 12 months) with pullets well grown, (10 to 12 months) is also a very good mating, far better than a cockerel to over-fat two-year-old hens. A two-year-old or older male is not desirable except for some particular purpose such as exhibiting excellence, or to establish a strain, or line breeding. All male birds should be kept away from the females during the moult. There is never any necessity to mate up more than a month in advance of the time eggs are required. The average time for the majority of eggs to be fertile is ten days after the introduction of the male birds, supposing that the hens are near to laying at the time.

FOUNDING A STRAIN.

Is is no part of a work like this to treat in detail the intricate subjects of Line breeding. Briefly put, line breeding is a system of breeding without having resource to very close inbreeding. Having found by trap-nest or other means that a certain bird always breeds winners, or is the best layer of the flock, anyone can perpetuate those qualities, providing the bird is perpetent and not a sport, by this we mean provided that a bird comes from a line that has been bred for some specific object for some time, and is not a chance purchased bird that may or may not be perpetent. Starting off with two such birds, male or female, the produce will be birds containing half blood of each parent, Take the best cockerel from the group, and mate back to the hens, and take the cock, now two years old, and mate to the best pullets, thus obtaining two groups, each of which will have ¾ blood of one side and ¼ of the other. Now if we mate a ¾ male blood cockerel to the ¾ female blood pullet, the result is just the same as the result of the first mating, namely half the blood of the male, and half of the female.

It follows then that breeding can be kept on for years in this way, and some good points retained, but not improved. Improvement must come from selection only, or the introduction of fresh blood.

HATCHING CHART.

Shows at a glance best month to hatch, best breeds to hatch, date of laying, and date of marketable age for table purposes, and provides for succession of eggs or table birds all the year round.

Month to hatch	Variety	Purpose	Laying Period	Ready for Fattening
Jan.	Table breeds and crosses	Table		* April and May
Feb.	Table breeds and crosses. Heavy breeds	Table	Aug., Sept., † Oct.	* May and June.
March	All pure Heavy varieties	Autumn and Winter laying	Oct. 1 to June and July.	Cockerels ready July
April	Pure non-sitting breeds Laying crosses	Winter laying ,, ,,	Oct. I. to June and July.	July, August.
May	Leghorns	Laying	Jan. to July and August	Cockerels ready Sept. and Oct.
July	Table crosses	Table	Pullets lay Feb. and March	Nov. and Dec.
Oct.	† Pullets should be retained for laying these slack months		This column provides for succession of eggs all year round.	Provides for succession of table birds all all year round. Best months for prices indicated with *
Nov. and Dec.	Pure table birds, table crosses.	Table purpose Table purpose	Pullets lay Feb. and March May June and July.	* Ready for Nov. Dec. * Dec. and Jan. Markets.

CHAPTER VIII.

PURE BREEDS; VARIETIES, AND RACIAL CHARACTERISTICS.

BROADLY, THE POULTRY OF THE WORLD COME UNDER THESE HEADINGS.

Asiatic breeds
British Breeds (so called)
French Breeds
American Breeds
Dutch Breeds
Mediterranean Breeds
A great class of A.O.V., or Unclassified.

Asiatic	American	British	Dutch
Aseel	Dominique	Dorking	Brakel
Brahma	Java	Orpington	Campine
Cochin	Plymouth Rock	Sussex	Hamburghs
Langshan	Rhode I. Red		
Malay	Wyandotte		
Yokohama			

French	Mediterranean	A.O.V.
Barbezieux	Ancona	Game
Creve-Coeur	Andalusian	Indian Game
Courtes-Pattes	Leghorn	Lakenfelder
Du Mans	Minorca	Polish
Du Mantes	Spanish	Silkie
Faverolles		Scotch Grey
Houdan		Sumatra
La Bresse		Sultan
La Fleche		

ASIATIC BREEDS, (MOSTLY ORNAMENTAL).

As might be expected are somewhat bizarre in appearance. As a rule they have a great wealth of feathers, such as the Brahma and Cochin, the giants of the poultry farm, with heavily feathered legs. Then the tall cruel-looking Malay, or the shorter and equally pugnacious-looking Aseel, the Yokohama with its magnificent wealth of sickle feathers, which attain wonderful lengths.

AMERICAN BREEDS. (STRICTLY COMMERCIAL)

What are termed the American breeds embrace some very important varieties; both for economic and exhibition values, some of the highest prices are realised by these birds. The Plymouth Rock, barred, with its beautiful, finely-barred plumage, pale grey in ground-coloured and irridescent green in its barring, with brilliant legs, is a fine example of the variety. The Buffs and Whites are also very popular, and the former is of extraordinary merit as a utility bird, inasmuch as it possesses very good laying propensities. The Blacks, sports from the Barred, and bred in to yellow legs, are practically the same as Black Javas which went to form the Barred 60 years or more ago. They are a very hardy family, and stand the rough and tumble of farm life exceedingly well.

RHODE ISLAND REDS.

A very popular breed, coming into prominence on account of its colour, together with its undoubted utility qualifications, as a layer, and a rapidly maturing chicken. The rich cherry red in juxtaposition to the yellow legs gives it a very pleasing appearance.

THE WYANDOTTE

Truly American in name, a breed with most beautiful sub-varieties, some thirteen in number.

The Silver Laced, a very popular study in black-and-white, white ground-colour beautifully laced round with green black edging. The Gold with a bay ground-colour in lieu of the white. The beautiful White, an eminently popular variety, the cream of our exhibitions, a record breaker in laying competitions, and which is entitled to claim the premier position in the Poultry world.

The Partridge, with its bright orange hackels, and almost crimson top-colour, with green-black breast, and its more sombre hen, with her beautiful dark pencilling on soft brown-gold ground-colour. The popular Columbian with its pure white body colour, neat green-black striped hackles, and yellow legs. The delicately-hued Blue, the glossy green-black Black, with its bright orange legs, or the pretty Silver Pencilled, or self-coloured Buff (buff throughout from head to tail). All Wyandottes are cobby birds, fast growing, excellent layers, and foragers. *

BRITISH BREEDS

The Dorking is the largest of British fowls, a premier table bird, and one of the "desirable" things the Normans took home with them.

The Orpington, the pride of British poultry, and the most recently made variety, and one that is known wherever poultry are kept. The Whites have an enormous sale in America. It was destined from the first to be an all-round variety; winter layer, early sitter, good chicken rearer and useful table bird, all these points it contains in a most creditable degree. The Buffs are required all Buff, as free from black or any other colour as possible, and with a rich even shade of colour all through. The Blacks are the most typical breed, but at present purely a Fancier's fowls.

SUSSEX.

Sussex fowls are just coming into exhibition prominence, primarily they are a utility breed, excellent winter layers, and fine table birds, extremely popular in the fattening centres; indeed Sussex blood forms part of the cream of table poultry and when crammed commands the best London prices.

DUTCH BREEDS.

The most popular varieties are Campines, Brackel, Hamburgs. The Campine, gold and silver, becoming more popular as an exhibition bird; in each case the feathers are

*Note—It will aid in the better understanding of the descriptions which follow, if the "glossary" is referred to when necessary.

laced across a green-black, or either white or golden-bay, ground colour. The Hamburgs, somewhat small, but extremely beautiful, whether it be the black with its cherry-red face, rose comb, and large kid-like snow-white lobes, or the gold pencilled with its green-black fine bars on a golden chestnut colour. Here again substitute white ground-colour and a picture of the Silver presents itself. The males, however, are self coloured, golden chestnut or white, with long black tales laced with bay or white as the case may be. The Spangled, rather larger, gold and silver (former with bright bay ground-colour), both sexes with round green black spots on the end of breast and body feathers. The silver a replica of the gold in all but ground colour which is white.

THE MEDITERRANEAN BREEDS.

The Mediterranean breeds are distinguished by their extremely active disposition, and large combs, upright in the cockerels, folding over in the pullets. There are two distinct types, the exhibition and the utility, the former about 1½ times as large in both body and comb than the utility bird. Moreover, the two types are not interchangeable for any purpose. The Ancona, black with white tick, and mottled black and yellow legs. The Andalusian, a popular exhibition variety, with silvery-blue ground-colour and dark rich, black lacing. The Leghorns, some 12 sub-varieties, the whites possessing proud distinction of being the most widely kept non-sitting variety on earth, and the successful heroines of many laying competitions. The Black Minorca, which has replaced the Spanish, is a fine breed for suburban runs, being a prolific layer of large eggs, and a smart clean-looking bird.

A.O.V. OR UNCLASSIFIED.

Of the unclassified varieties Indian Game head the list. Broad in build, heavy in bone, very heavy in body, and cruel in expression, they appeal to some tastes. In colour the male is, except for a little chestnut in hackel and wing-bay, a brilliant rich green sheen. The hen is nut-brown ground-colour, with a neat rich green-black lacing round the feathers, which is very distinctive. The "Crested Polish" and the quaint Silkies, the Sumatra Game, (a very sprightly green-black pheasant-like breed,) the pretty Scotch Grey, like a shepherd's tartan, and the Lakenfelder, a study in black hackle and tail, and white body colour, go to swell an army that is yearly on the increase.

CHAPTER IX.

PURE BREEDS.

"LIGHT" OR NON-SITTING VARIETIES.

ANCONAS. Two varieties, single and rose-comb, white lobes, plumage green black with white ticking at end of feathers, giving a mottled appearance. Legs yellow and green-black spots or all yellow.

ANDALUSIANS. Single-comb, lobes white, smoky blue or silvery blue ground colour, feathers barred round with a deep black shade. Cock's neck and back a lustrous black, breast and wings and fluff laced. Legs, slate or lead blue.

CAMPINES. Silver and gold. Silver, ground colour white, neck feathers white, rest of feathers barred transversely with narrow bars ending with a white bar. Barring, a green black. Legs, leaden blue. The Gold Campines have gold ground colour, other points the same.

HAMBURGHS. Five varieties. Black, Gold Spangled, Silver Spangled, Gold Pencilled, Silver Pencilled. All have white ear lobes; plumage, rich black with distinct green sheen on as many of the feathers as possible. Legs, black. Gold Pencilled. Plumage of cock, bright bay or chestnut, except the tail which is black, laced with ground-colour. The hen, same ground-colour as male, but back and body feathers and tail clearly pencilled across with bars of rich green-black, the same width as spaces between them. In the Silver variety substitute silver-white for bay. Gold Spangled, bright bay or mahogany ground colour, feathers tipped with bold greenish-black spangles. Neck hackle striped with black in both sexes. Silver Spangled. Substitute silvery-white for gold. Sub varieties are white and buff, but seldom seen.

HOUDAN. A French variety with black-and-white spangled plumage, double comb, large crest and muffings each side of the face, and well developed beard. In the hen the crest is globular, otherwise the same as the cock.

LA BRESSE. Black and White varieties, single comb. Beak, dark blue or slate. Lobes white or white with little red. Black plumage with green lustre. Legs dark blue slate. The White should be free from yellow.

LA FLECHE. Comb V shape, ear lobes white; plumage black with green sheen; legs and feet, slate or black.

LAKENFELDER. Single comb, white lobes; plumage pure white; neck hackle and tail solid black, slaty blue legs and feet.

LEGHORNS. Principal varieties. Single and Rose-comb. Ear lobes white or cream; legs brilliant orange. Colours, black with rich green sheen; Blues, medium shade of blue; Brown, orange neck-hackle in cock, crimson back and shoulders and wing bow, steel blue wing bar, deep bay wing end, rest of plumage black. The hen, partridge-brown, covered with minute black spots, salmon breast, black tail. Buff, any shade from lemon to deep buff. Cuckoo, blue-grey ground colour, barred across with bands of dark grey or blue. Duckwing, black in the cock, top colour white, yellow, or straw colour; back, saddle and shoulder coverts and wing bows, deep rich gold, blue-violet bar across the wing, tail, breast, and other parts, black. Hen, dark slate with finely pencilled grey colour; breast salmon; neck hackle, white with black striping.

SILVER DUCKWING. Cock, substitute white for red and gold in the above. Hen, silver, white hackle, back, sides and wings silver grey with fine dark pencilling; salmon breast.

PILE LEGHORN. As in the brown but substitute white for black portions. Hen, deep salmon breast, white hackle tinged with gold, the rest of plumage white.

MINORCA. Single-comb, two varieties, Black and White. Black, white lobes, horn coloured beak, glossy black plumage, slate to black legs. WHITE, leg plumage pure white.

POLISH. Gold, Silver, White-Crested Black, and White-Crested Blue. The Polish cock has a large crest and muffings at the side of face and beard. Hen, globular crest. Gold, golden bay ground colour, each feather laced with an even black lacing. In the Silver, substitute white for gold. Leg-colour, dark blue in all cases. Whites have no beard or muffings, but are pure white with dark blue legs. White-Crested Black, as its name implies. White-Crested Blue, a smoky dark blue and white crest.

REDCAPS. Large rosecomb; lobes, bright red; legs, slate colour. In the cock, black breast, underparts and tail. Top reddish ground-colour with black markings. In the hen, deep red-brown, each feather tipped with half moon green-black spangle.

SCOTCH GREY. Single-comb with white beak, white or mottled legs, ground colour regularly marked with rich black transverse bands.

CHAPTER X.

PURE BREEDS.

HEAVY OR SITTING VARIETIES

ASEEL. Very heavy bodied, wiry plumage, small in appearance. Colour, black, grey, black spangle, red spangle, white, yellow. Light peacomb and red lobes.

BRAHMAS. Very large, feathery, heavily-feathered legs and feet. Light Brahmas, white body-colour, black-marked neck, tail and wing, and foot feathering.

Dark. Cock, black breast, under parts, and tail; top colour, white, with black striping in hackles.

Hen. Hackle, silvery-white striped with black, rest of plumage a lean grey, each feather pencilled round with a darker shade.

COCHINS. Single combs and red lobes. Large feathery birds, profuse leg and foot-feathering. Colours; Black, Buff, White, Partridge, yellow legs, except the black Cochins, White have dusty yellow.

CROAD LANGSHANS. Single comb and red lobes; large, slightly feathered legs to outside toe; green-black plumage, blue-black legs, showing pinky white between the scales and under the foot.

DORKING. Single and rosecombed. Large rectangular shaped bodies, deep and long breasts. Legs and feet white, five claws each foot. Colour, Dark. Hackle, white or pale straw striped with black. Wingbows of male, white, or mixture of black and white, wing-end white when closed, rest of the cock's plumage black.

Hen. Neck hackle white or pale straw striped with black. Salmon breast feathers with grey or black tips, rest of plumage, dark heavy black laced feathers, centre of feathers brown with dark pencilling, feather to show a light shaft colour.

Red. Hackle gold with black striping, red brown plumage, with yellow shaft, some black spangling on the tips of the feathers.

Silver Grey. Cock. Top-colour, wing-bow, and wing-end, pure white, very fine black stripes in base of hackle admissable. Under parts glossy black.

Hen. Silvery-white neck hackle, small fine black hackle striping. Breast, salmon to bluish grey at thighs. Body, silvery grey, covered with dark grey pencilling.

FAVEROLLES. Thick and cobby in build, deep body and long breast. Colour, (cock), black breast and under parts, wing bar and tail; top-colour, a mixture of black, white and brown.

Hen. Wheaten-brown back and wings, pale wheaten-coloured breast. Legs slightly feathered in both sexes, five toes on each foot.

GAME. Single combed, very tall, reachy, long-legged. long necked birds. Colours; Black-red like Brown Leghorns. Pile as Pile Leghorn, Duckwings as Leghorns. Brown-Red, black face and wattles, bright lemon hackles, slight lemon breast-lacing, rest of plumage rich green-black, legs black. Birchen, substitute white for the lemon of the Brown-Red.

O.E. GAME. Single combed, over 70 varieties and sub-varieties. Chief are Black-Red, Spangle, Blue-Red. Black-Red cock, orange-red neck, back, saddle and wing bow; breast and under parts glossy green-black. Hen, partridge-coloured.

SPANGLE. Like Black-Red. Black or Blue, buff or red with spangles at the end of the feathers.

Blue-Red, single comb, orange-red hackles, dark red shoulders and back; breast, black with brown markings; wings almost black.

INDIAN GAME, pea-comb, red lobes, cruel-looking head, very wide bodied, thick, compact and dense. Colour, (cock) very glossy green-black, slightly marked with chestnut. Hen, a rich brown, each feather laced round with narrow green-black lacing, inside which a finer lacing, (running round the shape of the feathers) appears. Legs in both sexes very stout in bone, yellow in colour.

LANGSHAN. Modern single-combed. Very tall birds, deep, broad breasts, getting finer in body towards tail. Colour, rich green-black throughout. Legs black, showing pink between the scales and under foot.

Langshans Blue. Same type as above, ground colour slatey-blue, very dark top-colour in male, breast, sides, and fluff nicely laced with dark glossy lacing. Hen, same ground-colour as male, all feathers laced round with dark lacing, well laced all through in silvery ground-colour.

White variety. Pure white plumage.

MALAY. Walnut-combed. Very tall cruel-looking breed, snake-like neck, long limbs and curved back. Colours, Red, Pile, Spangled, White, and many sub-varieties. Red, (cock), black breast and under parts, wing-bow red, neck-hackle red. Hen, wheaten, or clay (self coloured). Spangled are practically the red, but spangled. White, pure white throughout, legs yellow.

MALINES. Comb, single, red lobes. Long, broad, flat back, deep body and breast. Coucou de Malines, plumage, cuckoo colour, bluish-white ground colour with blackish blue bars, inclining to brownish tinge. White, pure white. Ermine, white body-plumage, black striping in hackle, black tail, little black in wing.

Turkey-headed Malines, over-hanging eyebrows, little or no wattle, black plumage. The largest of all Malines.

ORPINGTONS. Rose and single combed, ear-lobes red. Splendid all round birds for egg and table purposes. Colours, Black, White, Buff, Blue, Black-Spangled, Jubilee, Cuckoo. All self-descriptive, except Jubilee, which is a mixture of any with black spangled-feathers end and a white tip. Leg-colour, black in in the case of Blacks, mottled black and white in Spangled and Cuckoo, slate in Blue, all others white.

PLYMOUTH ROCKS. Single and rose comb. Colours, Barred, Buff, Black, White. Barred, pale grey ground colouring regularly barred across with rich beetle-green barring. Other colours are self-descriptive.

SILKIE. Comb, a cushion of dark flesh with small nodules and furrows across the middle. Colours, black and white. Peculiar silky or hair-like plumage. Very soft and fluffy. Powder-puff crest in hens, silky, flowing feathers in cock. Colour of comb and fall, purple-black, ear-lobes turquoise.

SUMATRA. Pea comb. Comb and face black or dark red, or nearly so. Rich, glossy beetle-green plumage, small body, pheasant-like type and flowing tail in cockerel.

SUSSEX. Single comb and red lobes. Wide, long-bodied in shape, well-rounded and deep breast. Colour, red or dark chestnut throughout. Light, white body-colour, black-striped hackles, black in flights and tail.

Speckled. Mixture of rich red-brown and black-white, evenly speckled all over. Legs and feet, white.

WYANDOTTES. Rose combed. Colours: Silver, white ground-colour, feathers laced round with an even, rich, black lacing. Gold, substitute golden-bay for white, neck hackle striped black both cases.

Columbian. White body colour, black striped neck hackle, black tail and black in wings. Partridge. Cock, orange hackles, with green-black striping, rich red shoulders and back bay, wing red, black wing bar, tail, and under parts. Hen, golden yellow, black striped or pencilled hackle, rest of plumage light golden brown, marked round with dark brown, a short distance from the edge of the feather; an inner pencilling is very disirable.

Black, Buff, Blue, and White are self coloured. Yellow legs in all varieties.

YOKOHAMAS. Comb, single or pea, cocks have a great wealth of saddle-hackle and sickle-feathers, carried low, often trailing on the ground. In the hen the tail feathers are very abundant, almost sickle-like in character.

Colour: Duckwing, gold and silver (as the colour of Duckwing Leghorns). Spangled. Cock, black and white, black feathers with white tip. Hen, white hackle striped with black. Breast and thighs white, white with little black markings.

BANTAMS in most of the fore-going varieties, same character and marking, but smaller.

Variety	Sitting Qualities	Colour of Eggs	Table Qualities	Egg Producing Qualities	Weight of Eggs	Constitution	Foraging Capacity	Adaptability for Confined Runs	Comb
Ancona	Non-sitter	White	Moderate	Excellent	7 or 8 to the lb.	Hardy	Good	Stand confinement well	Single and rose
Andalusion	Non-sitter	White	Very fair	Excellent	7 or 8 to the lb.	Hardy	Good	Stand confinement well	Single
Aseel	Sitter	White and tinted	Good	Very moderate	9 or 11 to the lb.	Hardy	Good	Fairly well.	Triple or pea
Brahma	Sitter	Tinted to dark brown	Very fair	Variable, some good	7 or 8 to the lb.	Hardy	Moderate	Very useful	Triple or pea
Brackel	Non-sitter	White	Moderate	Good	9 or 11 to the lb.	Hardy	Excellent	Moderate	Single
Campine	Non-sitter	White	Small, but good	Good	8 or 9 to the lb.	Medium	Excellent	Good	Single
Coucou de Maline	Sitter	White	Good	Good winter layers	7½ or 8 to the lb.	Hardy	Fair	Stand confinement	Single
Creve Coeur	Non-sitter	White	Very good	Fair	7 or 8 to the lb.	Moderate	Fair	Sui semi-confined	V. Comb
Cochin	Sitter	Brown	Moderate	Good	8 to the lb.	Hardy	Poor	Quiet average	Single
Dumpie	Sitter	Tinted	Very fair	Good	7 or 9 to the lb.	Hardy	Good	Average	Single or rose
Dorking	Sitter	White	Excellent	Fair	8 or the lb.	Hardy	Fair	Very fair	Single
Faverolle	Sitter	Tinted to dark brown	Good	Capital winter layers	7 or 8 to the lb.	Hardy	Good	Very fair	Single
Game, old English	Sitter	Tinted to dark brown	Good	Capital winter layers	8 or 9 to the lb.	Fairly hardy	Good	Moderate	Single
Game, Modern	Sitter	Tinted to dark brown	Good	Capital winter layers	8 or 9 to the lb.	Fairly hardy	Good	Moderate	Single
Hamburgh	Non-sitter	White	Fair	Good layers	8 or 9 to the lb.	Moderate	Excellent	Excellent	Rose
Houdan	Non-sitter	White	Good	Good layers	7 or 8 to the lb.	Moderate	Good	Very good	Butterfly
Indian Game	Sitter	White to dark brown	Very good	Moderate	8 or 9 to the lb.	Hardy	Very fair	Not the average	Pea comb
La Bresse	Non-sitter	White	Very good	Good	7 or 8 to the lb.	Fair	Medium	About average	Single
La Fleche	Non-sitter	White	Good	Good on warm soil	7 or 8 to the lb.	Rather delicate	Very fair	Average	V. comb
Langshan Groad	Sitter	Brown	Good	Good	7 or 8 to the lb.	Fairly hardy	Fair	Good	Single
Langshan Modern	Sitter	Brown	Good	Good	7 or 8 to the lb.	Fairly hardy	Fair	Good	Single
Leghorn	Non-sitter	White	Rather small	Prolific	7 or 8 to the lb.	Hardy	Good	Good	Single and rose
Lakenfelder	Non-sitter	White	Moderate	Good	7 or 9 to the lb.	Fairly hardy	Good	Average	Single
Malay	Sitter	White to brown	Good	Moderate	8 or 9 to the lb.	Hardy	Moderate	Less confined	Half walnut
Maline	Sitter	Tinted to dark brown	Excellent	Winter layers	7 or 8 to the lb.	Very hardy	Good	Average	Single
Minorca	Non-sitter	White	Fair	Prolific	7 to the lb.	Need sheltered pens	Good	Excellent	Large single
Orpington	Sitter	Tinted and brown	Good	Excellent	7 or 8 to the lb.	Hardy	Fairly good	Good	Single
Plymouth Rocks	Sitter	Tinted and dark	Good	Excellent	7 or 8 to the lb.	Hardy	Good	Stand confinement	Single
Polish	Non-sitter	White	Very fair	Good in dry situations	9 or 10 to the lb	Not very hardy	Not very good	Excellent	2 small horns if any
Red Cap	Non-sitter	Tinted	Fair	Good on native soil	8 or 9 to the lb.	Moderate	Capital	Not the best	Heavy rose
Rhode Island Red	Good	Brown	Good	Very Good	7 or 8 to the lb.	Hardy	Good	Quiet average	Single and rose
Scotch Grey	Sitters	Tinted	Very fair	Very good	8 or 9 to the lb.	Hardy	Good	Quiet average	Single
Silkie	Excellent	Cream	Not esteemed	Fair	12 or 14 to the lb.	Hardy	Small	Good	Round cushion like
Spanish	Non-sitter	White	Fair	Good	6 or 7 to the lb	Need shelter	Moderate	Very good	Single
Sumatra	Sitter	Tinted to dark brown	Good	Moderate	7 or 9 to the lb.	Fairly hardy	Good	Not average	Pea comb
Sussex	Good sitter	Tinted to dark brown	Excellent	Very good	6 or 7 to the lb.	Very hardy	Most excellent	Above average	Single
Wyandotte	Good sitter	Tinted to dark brown	Good	Excellent	7 or 9 to the lb.	Hardy	Most excellent	Well adaptable	Rose
Yokohama	Sitter	Tinted to dark brown	Very fair	Good	7 or 9 to the lb.	Fairly hardy	Good	Not average	Single and pea comb

with hay, first stuffing a large ball of hay into the corners, then a little over the bottom of the nest, banking up the sides, so that the hen is on the nest the hay will be level with the top of her back. Hay packs close together and keeps the heat better than straw, When a broody hen is purchased from a fresh yard, she should always be dusted well with insect powder, for if she is troubled with insects she will not sit well.

The sitting hen should be fed regularly, but not allowed to come off and on when she likes, or the eggs may get too much cooling on some occasion. At dusk is the best time for feeding the sitting hen, so long as there is light enough for her to pick up the grains of corn, for she will then make the best use of her time and return to the nest without much trouble. Except in cases of illness dry hard corn is the best food, as it is slowly digested, therefore maize is a suitable grain ; a little grit should be supplied also, and water given to drink. Ten to twenty minutes should be allowed her to fulfil the requirements of nature ; in frosty weather eggs may be covered whilst she is off. If she is handled quietly even a wild hen will become docile the end of the hatch. If the broodies are scally-legged they should be dressed with half paraffin and half oil, and the bird allowed to sit a day or two on dummy eggs until it is soaked in.

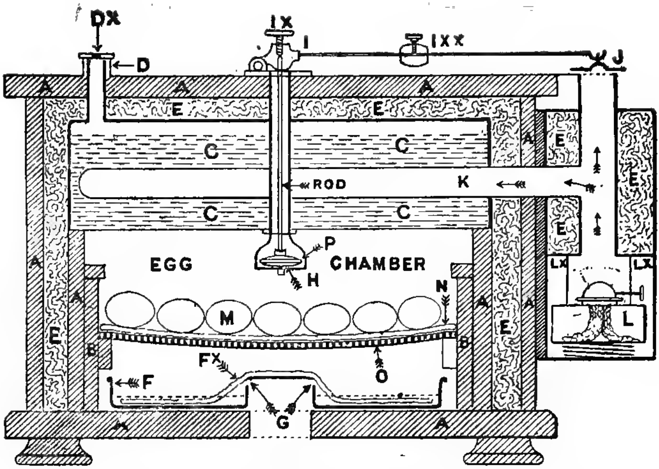
CHAPTER XII.

ARTIFICIAL INCUBATION.

THE POSITION OF THE INCUBATOR—EGG TESTING—COOLING THE EGGS—ON TEMPERATURE—TURNING THE EGGS—DEAD IN SHELLS, ETC.

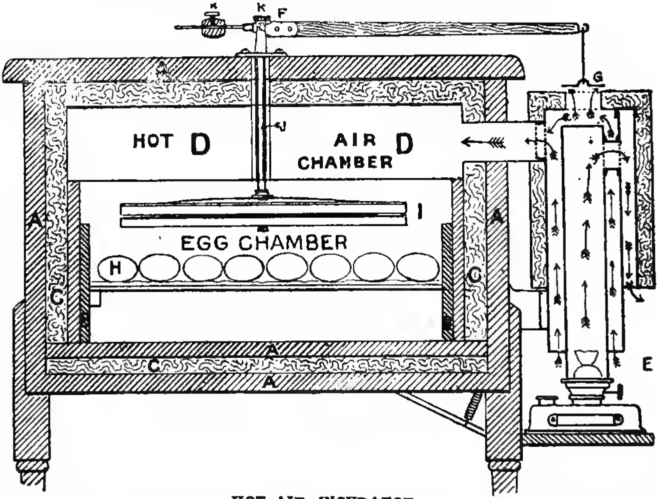
The incubator should not be placed in a direct draught between door and window, or door and fireplace, or the cold air will rush under the door with damaging effects to the eggs in the machine. It should be placed on a good firm bench about three feet from the floor and whenever possible the bench should be wide enough to admit of the drawer resting on it when it is pulled out, and from this it will be seen that the drawer should not be taken right out when the eggs are turned. If the drawer is taken right out the cold air will get in and cool the walls of the machine, and detract from the temperature, and it will take an hour or two to get the temperature to the right degree again.

It is very essential that the eggs should be quite fresh, if possible under three days old. Another point is that an incubator should never be filled to its utmost capacity. A hundred-egg machine is really only suitable for 70 or 80 eggs and the reason is not far to seek. If the machine is quite full the outside rows of eggs touch the outside of the drawer, and are beyond the range of temperature registered by the thermometer, as the heat shewn by the thermometer stem is the heat of the bulb and not the heat of the surroundings immediately beneath the stem. Mistakes are often made over this, for people think they are working at 103 degrees, but the eggs on the outside are not over 100 degrees, and as they are turned from time to time the outside ones coming in the middle, and vice versa, each in turn gets a prolonged chill and the result is an indifferent hatch.



HOT WATER INCUBATOR.

(A) Casing. (B) Egg Drawer. (C) Tank. (D) Tube to fill tank. (Dx) Screw cap to filling tube, with hole for escape of steam. (E) Asbestos Packing. (F) Water Tray. (Fx) Canvas in Water Tray. (G) Ventilation hole in floor of machine. (H) Capsule. (I) Lever bar, which raises damper lifting "rod" from capsule to lever bar. (Ix) Milled screw head for adjusting regulator. (Ixx) Lead weight for governing heat. (J) Damper. (K) Flues, through which lamp heat passes. (L) Lamp reservoir. (Lx) Lamp chimney. (M) Eggs. (N) Flannel or canvas. (O) Perforated zinc bottom to egg drawer. (P) "Stirrup," which supports capsule.



HOT AIR INCUBATOR.

(A) Casing. (C) Packing. (D) Hot air chamber. (E) Lamp and heater. (F) Regulating arm. (G) Damper. (H) Balance or regulating weight. (I) Thermostat. (J) Rod which actuates regulating arm. (K) Milled Screw for adjusting regulator.

ROOM TEMPERATURE AND COOLING.

At most experimental stations the rooms are of a genial temperature, rarely below 60° and often 70° or 80°. In summer the broody may leave the eggs for an hour or more, but the temperature will be somewhat above 60 degrees, and they will be in a sheltered place, and well endowed with vigour inherent from the hen living in natural conditions. But it would be folly to give such prolonged cooling in cold weather with a temperature of under 40 degrees. The reason for cooling eggs is that the embryo may at that time imbibe the larger amount of oxygen necessary for their growth. This at least is the reason usually given, but as there are birds that never leave the nest during the time of incubation, it is possible that it may be hunger that prompts a hen in natural conditions to leave the nest. However, a well ventilated genial room is the best for incubation purposes, and if the incubator be correctly ventilated, cooling the eggs longer than the time it takes to turn them is unnecessary in cold weather.

COOLING.

Cooling is given during the operation of turning them twice a day, which, unless the operator is very expert, takes about five minutes. The drawer should then be replaced and no further cooling be given until after the 10th day, when if the room temperature is over 60 degrees a few minutes more can be allowed if desired. The particular point to be observed in all this is that the incubator should regain the temperture of 102 degrees as a minimum well within half an hour of the drawer being closed. If this rule is adhered to, the incubatist is not likely to go far wrong in the cooling of his eggs under any circumstances. Some people cool until the eggs feel appreciably warm to the back of the hand, this is a very rough and ready guide. Whilst on the subject of cooling let us say that eggs can be hatched out satisfactorily, and produce strong chickens without cooling, as the correct amount of fresh air is constantly passing through the machine. In some machines cooling is a certain corrective for deficiences in ventilation.

FURTHER NOTE ON TEMPERATURE.

Many failures in artificial incubation are caused through not making allowance for the weather. A machine may have been worked in May in such a manner that it gave excellent results but such methods would not answer in the cold days of January. Very few people get a right conception of the heat of eggs half an inch below the thermometer, and in no two machines is the thermometer in exactly the same place. The thermometer above the eggs may register 104 degrees, yet the eggs below may not be 100, or in warmer weather one might find the thermometer 102 degrees, and the eggs situated below it a trifle *higher*. The thermometer should not actually rest on the eggs, because it might at one time rest on a fertile egg and another time on an unfertile one, and perhaps cause alteration of the regulator, but the thermometer should be on the same level and in the same stratum of air as the eggs.

It should be the aim of every incubatist to see that a uniform temperature of 102½ degrees at the lowest and 104 at the highest should be maintained. Having done so, there will not be much more variation than in a natural state of incubation, which all must copy as nearly as possible. Prolonged cooling in a cold room is a mistake, as the incubator has to regain its heat as well as the eggs, and this may take an hour or two.

SAVING EGGS FOR INCUBATION.

Only the very best eggs should be saved for incubation. They must be a good shape and have a good shell free from hard sandy little lumps, and those with a thick band round should be avoided. The eggs should be kept in a box of bran covered with a thick cloth to check evaporation. It is as well to give them a slight turn now and then in order that the yolk does not become fast to the membrane lining of the shell. They should not be too warm, and a kitchen cupboard is not a good place, it is too warm, but they must not be in touch with frost. Eggs that appear to be full of little holes or porous are not good hatching eggs, neither are those that finish with a tail or curly bit at the small end. Good, large, smooth-shelled, perfect egg-shaped eggs are those that give the best results.

IMPORTANCE OF GRADING THE EGGS.

The eggs should be graded or sized before putting them in the machine. Eggs of even size should be chosen, for the more equal they are in size, the less difficulty there will be in keeping them at even temperature. The smaller eggs can be given to a hen to incubate or transferred to the larder. If possible choose those that seem the same thickness in shell.

TURNING THE EGGS.

Eggs in an incubator should be turned twice a day, as nearly as possible every twelve hours. All who have sitting hens will notice how carefully they shuffle the eggs on returning to the nest, and poke some of the outer ones to the middle with their beak, and the inner eggs outwards. This is that all in turn may occupy the warm position of the central eggs, and for more important reasons. If an egg were left in one position, the water would go to the bottom of the shell and the yolk would float on the white, and there is the danger that in the incubator it would become fast to the shell. As the chicken is built up mainly from the white of the egg, it is important that a fresh portion of the white is brought in contact with the yolk on which lies the developing chicken. This is enough to justify turning the eggs.

EGG TESTING.

Testing the eggs for fertility must come sooner or later, and it matters not whether it be a beginner or the life-long poultry keeper, all are anxious to count their chickens before they are hatched, and it is only a phase of human nature to do so. There are advantages to be derived from testing if it is carefully followed out. Most of us are painfully aware of the scarcity of broodies early in the season, and systematic egg-testing enables us to make the most of them. For instance, three broody hens could be put to sit in one day, in seven days' time the eggs can be tested, and all the fertile ones can be given to a couple of hens, the third broody can be given a fresh lot. When a large number of chickens are reared every season this testing is most important. For the same reason two sizes of incubators can be kept, and after testing the eggs in the large machine the fertile ones may be transferred to the smaller incubator to finish off. Thus one large machine will act as starter to two small ones. The usual directions for testing are that you should, first of all, hold a new laid egg up to the light and observe its semi-transparency, then hold up to the light eggs that have been seven days under a broody or in an incubator; those like the new laid eggs are clear, but any that are dark, and evidently contain something, are fertile. This is quite true as far as it goes, but unfortunately, the embryo may die at any date, and it is very easy to leave a dead embryo in the machine, fondly thinking that it is a live chicken, This mistake can be avoided by carefully studying the accompanying illustrations.

THE FERTILE EGG.

The most noticeable feature about the fertile egg No. 1 is the very clear and decided line between the air cell and the rest of the egg. When this is sharp and distinct the egg is almost sure to contain a live embryo. Next to this the spider-like form will be noticed and a few veins near the line of demarcation between air cell and the rest of the egg. It is a sure sign of life if this spider-like form moves from side to side, and it is interesting to watch the rhythmic oscillation that tells of pulsating life within.

THE DEAD EMBRYO.

In comparing No. 1 with No. 2, it will be noticed how indistinct the boundary line of the air-cell is. This mistiness is a certain sign of something wrong within. We look lower, no veins are visible, there is no dark little spider-like body pulsating, the space where it should be is quite clear. Look lower again, here is a dark mass that moves to and fro, but it only moves as you move the egg, and however you turn the egg the dark mass moves in an opposite direction.

Unfortunately broken-yolked eggs are frequently mistaken for live ones. In the broken-yolked egg there may be a live embryo, but owing to the mixed contents of the egg, the blood vessels cannot grow as they ought, and generally show a red vein near the shell, as shown in illustration No. 3. With a little practice the bad eggs can soon be picked out, but they should at all times be handled with great care.

CHAPTER XIII.

CHICKEN REARING.

FEEDING AND GENERAL TREATMENT—DRY FEEDING—FATTENING TABLE CHICKEN ETC.

During the first few weeks of chickens' lives, like all other small animals, they require frequent feeding if they are to make substantial growth, and for the first week feeding every two hours is recommended, the meals being in the following order. Commence with soft food, next meal grain and always finish up the day with grain as it takes rather longer to digest. For soft foods the following are excellent.

(1) Biscuit meal, moistened with hot water or milk, and given as it is or dried off with fine oatmeal or middlings.

(2) Bread and milk; this should be prepared by putting the milk into a jug first then press in stale bread crumbs with a bottle almost to the size of the jug. The bread should be forced down until the milk will take no more, this then turns out with a fork in a nice crumbly mass.

(3) If eggs are given, they are better in the form of custards, and in very inclement and exposed sites such food undoubtedly can be borne and does a great deal of good.

For grain, a mixture of small seeds generally termed dry feed should be used. There are a large number of ready mixed dry feeds sold, and there is really nothing to gain in mixing one's own.

However, a good mixture is:—

DRY FEED.

Wheat	1 part
Groats	1 part
Millet	1 part
Peas (broken)	1 part
Maize	1 part
Canary seed	1 part
Rice	1 part
Hemp	½ part
Linseed	½ part

THE WATER QUESTION.

We consider that water should be given from the first. We have had no ill-effects from doing so, so long as a full fountain has always been kept by the birds. We argue that unless chickens could be fed entirely on insect matter and grub life, and succulent green food, which are roughly 70 to 90 per cent water, they should have water. A little finely chopped green food each day is beneficial to all chicks, even those on a grass run, especially when the hen is cooped. Skim milk may any time take the place of water.

The first to fourth weeks, feed five times a day.

(1) Bread and milk, prepared as directed, or biscuit meal and fine middlings, or oatmeal.

(2) Same as above, or oatmeal crowdy, or biscuit Meal and small quantity of bran well scalded and dried off with fine middlings.

(3) A little dry feed or chopped groats, or broken wheat.

(4) Any of the above soft foods, or rice, cooked and dried off with middlings or oatmeal. If rice is cooked in milk all the better.

(5) Either dry feed, groats, or small wheat.

VARIA.

Where plenty of household scraps are available, it is better to pass fish heads, meat, pork bones, etc., through a meat mincing machine, afterwards pass through any dry crusts, or cooked vegetables, then mix the whole with a little oatmeal.

In some cases chickens can be reared on such food alone, except that a little grain is given at night. If they cannot help themselves, give green food daily. After they are a fortnight old a little fresh cut bone can be given once a day. It must be fresh and finely cut, and is not required when a lot of meat is given.

A cabbage may be scored with a knife across and across until small pieces fall out, the chicks find these, and learn to peck at the cabbage.

Unless green food is given regularly, bowel trouble may result.

From one month or three months, feed four times a day. The first meal soft food, any that has been recommended.

(2) meal, wheat (small), or a mixture of larger seeds.

(3) Soft food.

(4) Grain, whole groats, small wheat, or a further supper of dry feed.

If rearing in confined runs a little cooked meat or fresh cut bone could be given at any time during the day.

Three months old, feed three times daily.

(1) Any soft food as advised, or equal weights biscuit meal and bran, scalded with milk or water, and dried off with ground oats, middlings or oatmeal.

(2) Grain one day, soft food the next, or grain and soft food mixed. It is a good time to teach them to eat good white peas. As a change, boiled wheat, some animal food or cut bone, if they are not on a very good grass range. Give plenty of green food if it is not naturally provided.

(3) Thin skinned plump oats, sound red wheat, or buckwheat, a little cracked maize to yellow-legged dark plumaged fowls, especially buff fowls.

FATTENING TABLE CHICKENS.

Three meals per day. Any of the soft foods advised for fattening ducklings. But at night sound bold wheat, either dry or boiled.

For trough feeding. For ten days two meals per day of Sussex ground oats, skim-milk, and a little fat ; the mixture should be just turning sour when used. Give as much as the birds will eat, then turn the troughs over. No water is given to these birds, as the food is prepared to the consistency of cream.

(See fattening).

VARIA.

Confining the chickens to a small paddock or yard and feeding liberally three times a day answers better than cooping for fattening with most people.

Chickens must be kept free from insects. Grit is required from the first.

CHAPTER XIV.

ARTIFICIAL REARING.

THE BROODER—AILMENTS OF "BROODER CHICKS" AND TREATMENT, ETC.—TEMPERATURE OF BROODER—NUMBER OF CHICKENS PER BROODER, ETC.

POSITION OF BROODER OR BROODER HOUSE.

A sheltered spot should be chosen for the brooder, as much out of the wind as possible, but always out of doors. The situation must not be too low or floods may rise after rain and swamp the chickens; fairly high ground, sheltered by a thick hedge from the wind, on dry, gravelly, or sandy soil is best, the grass being kept short for a few yards round. The spot should be accessible to sunshine and although the chickens may not resort to the warm chamber during the day, the lamp must not be turned out, as a breeze may arise or the sun be veiled, and as there is no hen for the chickens to run to, the brooder heat should always be available.

ARTIFICIAL REARING: PRINCIPLES OF.

Artificial rearing is an absolute necessity on any up-to-date poultry farm, chiefly as a labour saver, as large flocks can be attended to with the same facility as a coop containing a hen and one chicken. Artificial rearing can go on all the year round. This is perhaps a strong point in its favour, as it puts the poultry-keeper beyond the caprices of seasons or broody hens. Artificial rearing consists in applying heat to take the place of the natural heat which the chickens get from the contact with the hen's body. Artificial rearing by contact has not found favour with commercial poultry-keepers except in the case of the fireless brooder, and the majority prefer to supply heat in the form of a heated compartment. At present there are three principal ways of attaining this. One is by a tubular system of pipes which may run, perhaps 25 yards, through a series of small compartments in a brooder house, each compartment to accommodate fifty to a hundred chickens according to their size. Another is by placing a lamp in the brooder and raising the temperature in this way. Still another method is by putting a copper tank a short distance above the heads of the chickens, the tank being heated by flues as in the manner of artificial incubation. There are also many other devices, some after the pattern of a broody hen, in which copper coils, or hot-air tanks are used, but whatever the shape, the one aim should be to bring the heat of the compartment to within about 10 degrees of the temperature of the blood. A description of brooder house and rearer will be seen in another chapter. There is also the fireless brooder, which is a big box-like arrangement provided with a series of cushions, which conserve the natural heat of the chickens and so raise the heat of the compartment by keeping in the heat of the chicken's bodies. By this method it naturally follows that for its success a fairly large number of chickens should be placed in each brooder, the usual number being forty to fifty to each batch for the first weeks of their lives. Long experiments have proved that in lamp-heated compartments a temperature of 90 degrees for the first week is essential to success. The bulb of the thermometer in a foster mother should be two inches from the top of the bedding material, and should be placed where it is expected the average temperature will prevail. Near the door is, of course, the coolest portion of the heated compartment, whilst the point farthest from the door is usually the warmest. The thermometer, then, should be placed between these two positions, and worked at the degrees given in our scale, there will be little trouble in rearing the chickens, at any rate as far as heating is concerned. If they are comfortable and warm enough they should remain out of doors a considerable time each day. If they are unwilling to come forth and are rarely seen outside, it is a sign of insufficient heat in the brooder.

Scale. TEMPERATURE OF BROODER

1st. week 90 degrees or a little over.
2nd. week 80 degrees.
3rd. week 70 degrees. This may be continued longer if the weather is very cold.
4th. week 60 degrees, or longer according to weather.
After this gradually wean the chickens.

Apart from the temperature as recorded by the thermometer one can ascertain whether chickens are warm enough by their behaviour. Chickens that are warm enough come out of the rearer much more frequently than those that are underheated. When inside they sit together on the floor in a comfortable position just touching each other and not crowding. It must be remembered that we say "sit" for if a chicken is standing it is generally too cold, and if it is lying down it is too warm. In an overheated brooder the chickens will be found lying with their necks on the floor and their mouths open, nature teaching them that the air is coolest as it comes along over the top of the bedding.

Underheating will lead to crowding, the chickens crowding together terribly, and whole broods are put out of existence every year through this condition alone. It is not uncommon to start off with 80 or 90 chickens and have them reduced to 7 or 8 (a number which on account of its smallness cannot crowd), for once the habit is acquired, there seems no means of stopping it, and each morning the toll of dead will have to be taken from the unfortunate brooder. The chickens should be looked at last thing at night to see if all is quiet, for discontented chirps are signs of underheat.

If the attendant goes round with a lamp but does not touch the rearer before shining the lamp through the window, he will be able to see at a glance the condition the chickens are in, but if the brooder is touched, they will be up and on their feet and thus afford no criterion. The seriousness of a drop in temperature can be imagined when there are a couple of thousand chickens in a brooder house.

NUMBER OF CHICKENS TO BROODER HOUSE.

The number of chickens to a brooder is governed by its size. The sleeping compartment should never be full up, in fact the chickens should never occupy more than two-thirds of the floor space. A flock of 50 chickens does better than one of double that number. The rearer should be lime-washed and disinfected between brood and brood, and in warm months it is a good plan to allow the sun's rays to play on every part of it two or three times a week. Artificial heat should be continued at night some time after it has been discontinued in the day, and a mild evening should be chosen for the first attempt to wean the chickens.

TRAINING CHICKS TO USE BROODER.

It is not supposed that the chickens will run in and out of the brooder of their own accord without any previous teaching, but they are easily taught. The right way to work is NOT to feed them in the warm chamber. When they come from the incubator, transfer them as quickly as possible to the warm chamber and close the door and leave them an hour or so, then open the door and try to entice them out for a little food. They may not be very anxious about it, and then should be put back and left for a few hours longer. Having got the majority of them out to feed, carefully drive them back again, and leave them until next feeding time, then repeat the process and when it is seen that they go back once or twice of their own accord, they may be left with safety as they never forget the knowledge. It is a good plan to have a wide piece of board put a few inches from the doorway so that the chickens may be closely confined near each entrance of the door for the first day or two, and if fed in this spot, they will readily find their way in and out of the brooder.

FLOORS AND FLOOR COVERING OF BROODERS.

The question of floors is an important one. Whilst a wooden one is absolutely necessary in the heated compartment, and sometimes in the second compartment, (which is used as a scratching shed), the chickens after the third day should have access to the bare earth beyond these two compartments, whenever it is fit weather, as all attempts to rear chickens on boarded, tiled, or cemented floors are invariably followed by failure. Chickens may appear to thrive for a week or two, but sooner or later the dreaded leg-weakness, (to which such chickens seem more liable) is bound to occur, and one rarely escapes such an attack without the loss of some of the birds.

BEDDING FOR THE BROODER.

The question of bedding for the brooder is also an important one. Any materials that are very dusty are unsuitable for this purpose, because the air in a brooder is always dry, and dusty bedding makes it more so, and makes the birds extremely thirsty and liable to drink far more than is good for them, when let out in the early morning. Fine sand is a good bedding and peat moss ground as fine as coffee is another good material, and one easily obtained is chaff composed of the husks of oats or barley, or chopped hay. The bedding should be a good depth for two reasons, one is that the birds' feet do not penetrate a deep bedding, and it aids in retaining the heat of the compartment. The chicks should never be fed with soft food in the sleeping compartment. If bad weather keeps them to it for any time, only a little dry food should be given, as soft food would adhere to the birds' bedding material. Garden mould, as litter, sometimes adheres to the birds' claws and sometimes results in the loss of a claw.

AILMENTS OF BROODER CHICKENS AND THEIR TREATMENT.

CRAMP AND LEG WEAKNESS.

If the heat is too great and the feeding too heavy, leg-troubles will be in evidence, but spare feeding and gradual reduction of the brooder temperature and a teaspoonful of Salicylate of Soda in each half pint of drinking-water will help to bring about a better state of affairs. Cramped toes may also be bathed with hot water and carefully painted with iodine once or twice. The heat of the brooder should not be greater than that indicated on the scale.

DIARRHOEA.

Diarrhoea is usually the result of a chill. Symptoms are, hardness about the vent and excrement adhering to the fluff. Treatment, clip the fluff and release the accumulation, then smear a little olive oil or vaseline on the part. It is important that this condition should be treated at once, or death will quickly follow. A change in diet would also be advisable, such as a teaspoonful of olive oil in every ¼ pound of soft food and also a little powdered charcoal, but too much darkens the food and they will not eat it.

Well-cooked meat is also beneficial.

GENERAL REMARKS.

The brooder lamp should be attended to in the daytime as one can see then that it does not smoke before retiring for the night, as the flame sometimes increases after it has been trimmed. Patent lamp-wicks which run three weeks without trimming are desired for the brooder, as the flame gets less and less, owing to the carbonisation of the wick, and in this way the chicks are generally hardened off. An excess of heat is apt to bring on heart trouble. Rearer chickens should always be hungrily active, and it is better to fill their crops gradually during the day than to fill them in the early morning, little and often should be the golden rule, finishing off with a substantial supper. They should have water to drink from the first, whether they are being fed on soft food or otherwise.

Chickens should never be taken from under a hen and placed with a flock in the brooder without strict examination, as thereby lice and ticks may be transferred to the whole brood.

To secure the chicks from the inroads of rats the front of the scratching-shed portion of the rearer should be of small-mesh wire netting, the floor should be covered with this material and covered with soil an inch deep. Failing this, small doors of quarter-inch mesh netting or perforated zinc should be made to confine the chickens to the warm chamber during the night, and the floor of the scratching shed left bare.

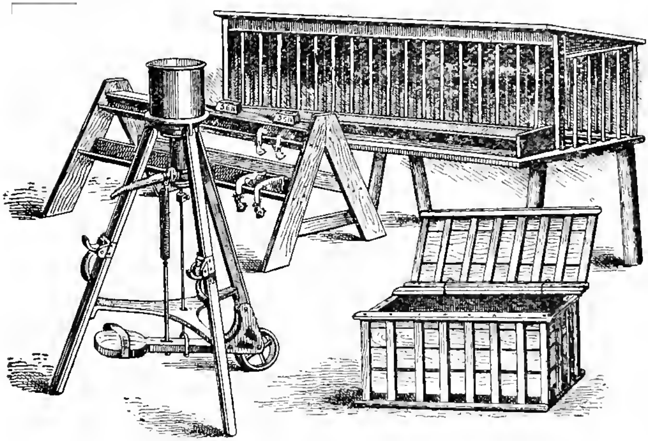
It is impossible to rear some chickens either naturally or artificially, but if the poultry keeper follows all these methods he will have done all that is possible. Rearer chickens grow as quickly as those under hens and it is quite possible to get them to a pound-a-month weight.

CHAPTER XV.

FATTENING TABLE POULTRY.

THE COOPS,—FEEDING—PLUCKING—CRAMMING—CHARACTERISTICS OF TABLE BIRDS—PETIT POUSSINS ETC.

Fattening is somewhat a matter of locality; in some districts no extra price is obtained for fattening fowls; but we wish to show the poultry-farmer how to fatten his stock when necessary.



APPLIANCES USED FOR FATTENING TABLE POULTRY.

THE AGE FOR FATTENING.

A chicken or fowl can be fattened at any age, but it is inadvisable to fatten fowls that are in partial moult whether chickens or adults. The spring chicken is generally 12 weeks old, weighing about 3 to 4 lbs. when put up to fatten. Some varieties, however, cannot be made to fatten, therefore we give suitable varieties elsewhere in the book. Birds with thin, lanky thighs, very prominent breast bones and emaciated appearance never fatten well; the chosen birds should be healthy, wide in chest with a fair amount of breast muscle, plump thigh, long body, fairly tight feathers.

Skin and leg colour is preferably white, and fine grain in comb indicates fine flesh.

SIZE OF FATTENING COOPS.

Size of fattening coop. Six feet in length, 18 inches from back to front, divided in three partitions 2ft. each. When birds are reared together, two compartments of 2ft. 15 inches. The floor of the fattening coop should be entirely of bars 1½ inches in width and 1½ inches apart. The front also should be of bars 2 inches apart, the middle one made to slide up and down so that fowls can be moved without unlatching the fasteners. The coop should stand on legs 3 ft. in height or on a skeleton bench, to be of easy access to the fattener and to enable the manure to be easily swept from under. A loose V shaped trough goes along the whole of the front, resting on supports. No water vessels are needed, as fattening birds do not have water.

THE PROCESS OF FATTENING.

The fattening process takes ten days to three weeks, no longer, except for exhibiting table poultry.

In fattening for three weeks birds should be fed twice a day from the trough at regular hours. After ten days it is "half fattened." A large percentage are sold half fattened, but the fully fattened birds command best prices. The last ten days they are fed with a cramming machine. Two things are necessary to success, the birds should have fasted before being put in the coop and must be kept free from vermin. Flowers of sulphur obtainable at 7 lbs. per 1/- should be used to dust the birds to prevent vermin.

FATTENING FOODS.

The most generally used meal is Sussex ground oats which are ground between specially dressed stones, almost to the consistency of flour, hardly any husk being visible in a good sample. Other foods can be used, but few contain so large an amount of phosphates, which with those in the milk have a bleaching effect on the flesh of all birds. Skim milk is used for fattening, and is usually turned sour by having large tanks for the reception of the milk, and pouring in each lot as it comes. The tank should be washed out once a month. The contents of the tank should be stirred before taking any out, then covered up to keep out dust, sun etc., or the supply of food made some days in advance and allowed to go sour, by this method three or four lots should be mixed, and as one day's lot is used another should be mixed. Giving sour food is anticipating digestion by a few hours as the same process is undergone in the bird's stomach and it obviates the necessity of green food. The fat used can be beef or mutton or suet fat, as white as can be got. It is usually heated until liquid then mixed in the milk.

MIXING THE FOOD.

For trough-feeding the dry meal is placed in a bucket, hollowed in the centre, and milk poured in, then the whole is mixed into a stiff mortar-like paste (about the consistency of stiff porridge). If a piece can be lifted with the fingers and does not fall in a second or two, it is two thick, if it be impossible to gather any between finger and thumb it is too thin. No melted fat is added to food for trough-feeding. No water is required, but a little grit the first day or two is advisable.

For Cramming. In this case the food should be mixed to consistency of cream ; if a spoonful is poured on a board it should not "run." To begin with, 1½ ozs. of fat to each 2 lbs. dry meal is used, giving half an oz. more each day so that by the 11th. day 4 ozs. of fat go to every 2 lbs. of meal. This is the utmost to be used with safety. In summer the meals should be 12 hours apart, in winter as early and late as day-light allows.

TO HOLD THE BIRD FOR CRAMMING.

1. Lift the bird quietly from the fattening coop, and tuck it under the left arm.

2. The left hand should now grasp the head, the left thumb going well over the lobe, the foregoing finger being placed on the tongue, holding it firmly down or the windpipe may be injured.

3. The rubber tube attachment to the cramming machine having been moistened (for 1st bird) insert it in the bird's throat and push gently down until the end can be felt in the crop.

4. Grasp the crop with the right hand.

5. Apply pressure with the foot to the pedal, when the crop almost full take foot off pedal.

6. Release the bird, *always taking foot off pedal first.*

If at next feeding time there is food in the crop, give less than on the former occasion. The neck must be kept quite straight whilst slipping in the rubber tube. In winter rather more food is given at night than morning, to compensate for the longer hours of night.

KILLING.

Before killing, the birds should be kept without food for 24 hours at least, in order that the internal organs may be practically devoid of food. Food in the digestive organs leads to rapid decomposition—a "green" carcase. The fowls should be killed by dislocating the neck. The legs and the tips of the wing feathers should be grasped, take a good hold, lay the bird across the left hip with its head near the right thigh or knee. The head should be grasped in the fork of the 1st and 2nd fingers of the right hand, the backs of the fingers to the back of the bird's head, thus bringing the comb and head into the palm of the hand. Now straighten the neck, and suddenly pull, at the same time bending the fingers sharply towards the wrist, and the head slips off its axis, quite easily, too much force will pull the head right off. Force is not needed, it is the right spot, which is the first joint from the head.

PLUCKING.

No written instructions can assist the would-be-poultry-farmer in plucking, this must come by experience alone. At first it is always a tedious job, but practice makes perfect. Pluck as soon as the bird is killed. When plucked, the bird requires to have any pen-feathers or stubs removed, the easiest way to do this being to grasp them between a thumb and a blunt knife blade, which is placed close down under the quills, and pressing the thumb tightly on them they are easily removed. The bird is now ready for singeing.

SINGEING.

Perhaps the cleanest method of singeing is to have a little methylated in a small flat tin-lid, light, and singe the bird with that. A country method is to do it with a straw, which is rather a smoky way : a taper is also liable to smoke. The poultry dealer uses gas when available, by means of a rubber connection to the pipe.

THE SHAPING TROUGH.

The warm body is then ready for the shaping trough. The troughs are simply two boards at right angles to each other, having, when possible, a little gap between the two for drainage and washing. The bird is placed breast downwards, and the points of the wings folded back inwards towards and across the back of the neck, the rest of the wing then fits snugly by the side of the bird. Fit the birds closely together, and if not enough to fill the trough a block of wood must be used to keep the last bird upright. The neck and head hangs downwards over the front of the trough, the legs being pressed closely to the sides of the bird. All that remains now is to place the flat board (less than 4 in. wide) across the backs of the birds, and to put on the weights or bricks, whichever are used. The birds remain until absolutely cold.

PACKING THE BIRDS.

A light crate admitting some air is required for packing unless the usual ped can be obtained. Line with straw, then place a layer of fowls breast downwards, very closely side by side, so that they will not rub in travelling. The tail piece of the bird is packed against the side of the crate. If a second tier is needed a layer of clean straw should be placed between it and the lower one.

VARIA.

Scrub out all food troughs, weekly or bi-weekly, according to the weather. To know when a fowl is thoroughly fat, feel for the two bones underneath and at either side of the tail-piece, a little higher than the vent. It will be difficult to grasp these if the bird is fat. Also the skin between these two bones will be nearly straight or level in the fat bird, in a thin one there is a considerable depression into which the finger would slip. Once a bird is "ripe," as indicated by this fullness about the pelvic bones, which cannot be grasped in a "fat" specimen, they are ready for killing, whether they have been fattened a few days or the full three weeks. Some are ready in ten days, and once ripe no further gain, but a possible loss, may be expected.

RATE OF INCREASE IN WEIGHT.

The rate of gain at first is very small, but at the end of three weeks fattening a gain of 1 lb. to 2¾ or 3 lbs. may be recorded. The greatest gain is by the end of the second week. The gain the third week is comparatively small, but adds considerably to the quality and finish of the carcase. From 100 to 200 birds can be crammed in one hour, according to the skill of the operator. The cost of fattening a bird for three weeks works out at from 5d. to 8d. per bird, according to the prices of meals, and the amount of labour employed. When the owner is the poultry man the former price is approximately correct.

PETIT POUSSINS AND POULET AU LAIT.

Petit Poussin is a French term for a milk chicken, one which is sold from the age of six to eight weeks and should weigh 6 ozs. or 8 ozs. A Poulet Au Lait is sold between the ages of six to nine weeks, and the weight runs from 12 ozs. to 16 ozs. They are specially reared on a milk diet and the demand is limited, but it is a useful way of disposing of cockerels of light varieties such as Campine or Leghorn which never make enough growth for ordinary market trade.

TABLE CHARACTERISTICS OF COMMERCIAL BREEDS.

Breed	Colour of flesh and leg	Quality of grain	Breast meat	Plumpness at point of breast bone	Length of breast
*Dorking	White	Fine	Good	Good	Excellent
†Faverolles	White	Fine	Good	Good	Ve good
*Indian Game	Yellow	Medium	Excellent	Excellent	Medium
†Orpington, buff, white	White	Medium	Very good	Moderate	Medium
†Sussex	White	Fine	Very good	Very good	Very good
‡Game O.E.	White	Very fine	Excellent	Excellent	Moderate
‡Houdan	White	Fine	Good	Good	Medium

* Heavy in bone.
† Medium bone.
‡ Very fine in bone.

CHAPTER XVI.

THE MARKETING OF PRODUCE.

PRIVATE TRADE—WHOLESALE TRADE—SALESMAN TRADE—AVERAGE PRICES ETC.

Marketing may be roughly classed under these headings :—the private trade, the wholesale, or salesman's trade, and the county market trade. A poultry farmer in a small way should aim at a private trade if in the vicinity of a large town. The larger poultry farmer will of course deal direct with the salesman, unless he can make contracts with a Railway Co. or some large hotel to take a certain quantity of produce on certain dates. The county market trade is rarely adopted by the poultry-farmer, and when it is, it is chiefly for the sale of eggs. A reliable salesman should be found, and, as a rule a personal interview is advisable. London salesmen work on the following methods. Some settle daily, others bi-weekly, others weekly, weekly being generally the extent of the credit ; good houses dispatch cheque with great punctuality. A commission is charged on the price realised. For packing, see fattening.

The price to charge private customers is a difficult point to arrive at. Contracts are usually made at so much per lb., it is purely a matter of arrangement.

AVERAGE PRICES OF TABLE POULTRY DURING 1911. (LONDON)

	Fowls.				**Ducks.**			
	Surrey		Sussex		Aylesbury		Country	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
	3/2½	5/3½	2/7½	4/1½	2/11⅝	3/11¼	2/5½	3/6½
Average.	4/6		3/4½		3/6		3/0	
	Surrey		Sussex		Aylesbury		Country	
Maximum	March	6/0	April	5/0	March	7/0	April	6/6
Minimum	Sept.	2/6	Sept.	2/3	July	2/0	Sept.	1/9

From highest to lowest prices there is a gradual decline and steady rise.

Some Average Market Prices.

Live Poultry

Large Ducklings	2/4	
Old Hens	2/6	Weighing 6 lbs. upwards.
Ditto	2/0	,, 4 lbs. ,,
Ditto	1/6	,, under 4 lbs.
Fat Old Ducks	2/3	
Old Geese	4/9	

CHAPTER XVII.

CROSS BREEDING.

OBJECTS OF CROSS-BREEDING—PROS AND CONS—TABLE CROSSES—LAYING CROSSES, ETC.

The question that arises is—what are the objects of cross-breeding, what are the merits and demerits of cross-breds? The chief merit in a cross-bred is a gain in constitution and vitality, and next to that a gain in some economic characteristic which is not contained in a pure-bred. Amongst the hundreds of pure breeds, there are none which satisfy all requirements. This is particularly the case with table poultry. We have, amongst our heavy varieties, birds which in their pure condition are excellent table varieties, but none so good that it cannot be improved upon by a cross. Another thing is that the bulk of the prizes in the table-poultry section go to cross-bred exhibits. The Orpington is a case in point. It is one of the best all-round breeds we have: white in flesh, a good winter layer, yet undoubtedly somewhat thin at the point of the breast bone, a part which is particularly difficult to cover with fat, and often a crammed Orpington has not the full appearance that a cross-bred Orpington and Indian Game has. One merit of a cross, then, is to attain a needful attribute naturally, and so eliminate its having to be attained artificially. The Indian Game, all the world over, is a bird notoriously dense and heavy in muscular development, the pectorial muscles being almost abnormally developed, and, in a lesser degree, this remark applies to O.E. Game, but the Indian is the larger fowl of the two and more suitable for a market cross. When pure, its flesh and skin is rather yellow, and although a heavy bird, it is not as nice looking when plucked as an Orpington, but by a cross between the two, the yellowness is lost, and the thinness in the Orpington is made up by considerably more development of the pectoral muscles, and the product is a bird that fattens readily and looks a credit to the fattener, as it is a pleasure to the salesman who has to handle it. Table birds are also crossed for two objects, plumpness of breast and length of breast, and for the two combined. The Indian Game gives both plumpness and length, the Dorking, very great length and whiteness of flesh, Houdan plump breast, white flesh, fine bone, but hardly as big as those of the foregoing.

The following crosses, which are to be as far as possible in the order marked, although this is dependent a good deal on the district in which they are to be raised, are all excellent.

Indian Game—Dorking
Indian Game—Orpington
Indian Game—Sussex
Faverolles—Orpington
Dorking—Orpington
Houdan—Orpington

CROSSES FOR EGG PRODUCTION.

It is a moot point whether anything is gained by crossing for egg-production, except it be that in some districts a cross-bred is a little hardier and would stand rougher fare and harder quarters than some of the pure-breds, and although they are very prolific egg-producers it is not wisdom to attempt to breed from them, as much of their virtue departs when a third or more cross is introduced, so that in crossing for laying purposes it is necessary to keep to the two breeds with which one commenced.

Another feature of the laying-cross is, that the more widely the varieties differ, the more suitable they are for a cross; hence we come to the invariable rule that a cross between a sitter and non-sitter is perferable to a cross between two sitters or two non-sitters, there being little or nothing to gain by the latter. In the case of two sitters the broody propensities are likely to be intensified. In case of two non-sitters there is very little to gain in point of hardiworth which is one great point for which crossing is introduced. Another salient point in crossing for egg-production is the gain in time, for a sitter requires eight months to develop and a non-sitter requires six months, but a cross between the two will require seven months. Thus, if from climatic conditions a hatch of heavy breeds have resulted in smaller numbers than was expected, the difficiency can be made up by means of crosses as described. To be clear on this point we may say that it is not an infallible rule for a sitter to take eight months to develop or a non-sitter six, as in both cases we have known them lay at the age of 17 or 18 weeks, but it is necessary for them to have the time stated if they are to lay a full sized marketable egg, which, if they commence to lay at the earlier age, they do not.

We have said nothing about the demerits of the table-cross because there are not any, for as both cockerels and pullets are sold for table purposes, the mistake of retaining pullets of table-cross for egg-production should not be made. The demerits of laying crosses are, that one cannot obtain high prices for their eggs for incubation purposes, that they are of very little use for sale as stock birds after their first season's work, and that on the whole they generally lack the type and general uniformity of pure breeds, giving a certain neglected aspect to a farm however well it may be equipped. They are really more suitable for the cottager and artisan than a big commercial poultry farm.

LAYING CROSSES.

White Leghorn-White Wyandotte
White Leghorn-White Rock
White Leghorn-Buff Rock
Buff Leghorn-Buff Rock
White Leghorn-White Orpington
White Leghorn-Buff Orpington
Minorca-Orpington
Minorca-Langshan
Ancona-Langshan
Houdan-Langshan
Houdan-Minorca
Andalusian-Wyandotte

Chapter XVIII.

BY-PRODUCTS.

Value of Manure—Feathers, etc.

Poultry farmers look at the question of by-products from different standpoints. To some, these trifles appear worthy of consideration, to others the loss of time in accumulating them would cause an actual loss in the realisation; still the facts remain that in poultry manures the agriculturist has some of the finest dressings for his land that can possibly be produced, and the value of them is becoming more known to farmers every year. We look at it from two standpoints, one is that it emphasises the desirability of having the manure removed from the farm, the other is that it has commercial value.

It has been reported on excellent authority that it is a more concentrated and better dressing than the ordinary form of manure, but for whatever purpose it is intended, dry storage is very essential. It is an exceedingly wasteful proceeding to throw it into the ordinary midden for the rain to wash its most valuable constituents into the soil beneath, and on an up-to-date poultry farm, a large dry shed should be provided for the storage of it, into which shed it should be removed periodically from the house. The poultry keeper when offering it for sale might remember that as a rule half a ton of dry well-broken poultry manure is sufficient dressing for an acre of land, and the smaller lumps it is broken into the more efficacious it will be. As to value, anything from £2 to £3 a ton will be a reasonable price.

Manure.

The composition of fresh poultry manure is :—

Water	60.0	Dried.	
Organic Matter	19.2	Organic Matter	59.26
Ammonia	1.75	Phosphates	13.79
Phosphates	4.3	Carbonate of Lime	23.58
Salts. Alkaline	1.10	Alkaline Salts	3.37
Carbonate of Lime	8.1		

FEATHERS.

Feathers have two outlets. One is to feather merchants for various commercial purposes, the other is to be used as manure, though perhaps the amount needed for this is not very great. In selling feathers for commercial purposes the price is about 2½d. to 3d. per pound. When plucking poultry, the feathers should be sorted for colour and size. If possible, white, black, and brown should be kept separate, but white are more valuable than the others. Duck feathers should also be kept separate as they are worth far more than hen feathers.

Feathers can be stored or prepared for use for private customers, by being placed in paper bags, tied up and baked in the oven at intervals of half an hour repeated on different days, after which the bags can be slung to the roof of a dry kitchen ceiling or some other warm dry place.

When used for the purpose of manure, feathers are worth about £5 a ton, they are rather valuable in the cultivation of hops. The advisability of keeping the stiff feathers away from the small down feathers is evident, as the long feathers are rather slow in decomposing; this the agriculturalist is aware of, but the small down feathers form a very active manure and consequently realize slightly higher prices. Feathers may be classed as nitrogenous manure, containing about 90 per cent of nitrogen.

CHAPTER XIX.

PROFITABLE SIDE LINES.

THE PACKING AND DISPATCH OF DAY-OLD CHICKS, ETC. PACKING POULTRY—PACKING SITTINGS OF EGGS.

The business in day-old chicks is not likely to be overdone. and most poultry farmers can make something extra with their eggs, just when egg prices are at their lowest, by turning them into newly-hatched chickens. The greatest asset to this branch of the business is, having the eggs to incubate layed on the farms, as fresh untravelled eggs hatch freely. At no time in a fowl's life does it travel as well as during the first 24 to 48 hours of its existance. The reason is that the newly born chick requires neither food nor water during the first 48 hours of life, and can go even longer. Owing to this natural advantage the chicks can safely travel 300 miles or so on rail or water. The physiological reason being that the chick absorbs the yolk just prior to emerging from the shell, and this supplies all the pabulum required for the time stated. During the time the chick absorbs this, it becomes stronger and stronger, arriving at its journey's end ready to jump out of the box and begin feeding at once.

PACKING THE CHICKS.

Specially light boxes are made for the conveyance of newly hatched chickens, and are to be advised, as they give a much more business-like aspect to the consignment, and greater satisfaction to the customer. A stock size for a dozen chicks is a box 9 inches by 14 inches by 9 inches in height of there abouts. For a couple of dozen a box 15 inches square is used. It is better to send two or three boxes with a couple of dozen each than all the chicks in one consignment. Of course a long light box with divisions in could be used to to take as many as the box would hold in 2 dozen lots in the compartments the size stated. These boxes are made of light wood or cardboard, and are fitted with the requisite ventilation holes. If any other light box is used, it might be flannel lined, tacking some soft hay between the flannel and the sides of the box, and rounding the corners so that the nest is circular, this is very advisable in cold weather. The best covering for the floor is short chop, such as is sold for horses' foods, teamed chop preferable. Otherwise clear Oat-flights or chaff; freedom from dust is essential. Lids to these boxes are lined with flannel, which is made to sag, some cotten wadding being used to fill the space, which makes a nice cushion which rests on the chickens heads and backs. A V shaped piece, one inch deep and one inch wide at top, taken out of each end of the box provides ventilation, or circular hole about five-eights of an inch. When packing chickens put in such a number that the chickens can sit quite clear of each other on the floor; as long as they have room to turn round comfortably, no room is needed. Cardboard chick-carriers can be obtained at 1/6 to 2/- a dozen, the former price when gross lots are taken. The boxes should be labelled in large print, with the words *Live Chicks*, these can obtained from the Poultry World Office, 154, Fleet Street, London E.C. Prices 24 for 3d. 50 of 6d. 100 for 1/- with sender's name and address 1/9 per 100.

CHOOSING TRAINS.

As a rule night is the best time to dispatch chicks, choosing the through mail trains when sending a long distance. A good Bradshaw Railway Guide, and the patience to study it, is a most useful adjunct to this business. It is a good plan to send printed instructions as to how the chicks should be treated on arrival; if apparently dead revive by the warm fire, warmth is more than food to them at such times, when well warmed up they will eat. After a good warming up, if they need it, food and water should be given them, and when satisfied they can be transferred to the hen, or foster mother, whichever it is take them. The seller is by custom supposed to replace those that die on rail, therefore the package should be examined by the buyer, and before signing for them at the station, the Railway Officials will be able to verify the number of dead, in case of doubt or dispute, as the Consignee will sign the sheet for number of dead, if there be any. Be prompt in dispatching punctually. Dont take more orders than can be fulfilled, rather the other way, since a waiting customer rarely comes a second time. Do not substitute one breed for another and say it will do as well, if you cannot fulfil the order, return the money promptly. Dont forget to advise the purchaser by the mail preceeding the dispatch of the chicks. One cannot send chicks by Parcel Post. Do not send Carriage Paid.

Prices run from 10/- to 20/- or more per dozen for pure bred chickens, and if from proved victors in the show-pen double these prices are fairly easily realisable, The chicks should be dispatched as soon as dry, or nearly dry, from the Incubator, and no attempt should be made to feed them.

PACKING POULTRY.

In our description of appliances we have remarked on the crate for packing, which is usually called a "ped." These can be got in different sizes to hold from one dozen to three dozen. Whenever possible the birds should be placed in a cool cellar and should be handled very carefully while warm, as the least bruise shows, especially on a duckling. A Sussex method is to put them in a shaping trough and weight them down, after a few hours they are taken out and properly cooled and packed for transit in a ped. First there should be a good layer of straw lining the sides and bottom, then the birds are put in, packed tightly and closely together, using paper between the layers, and a good covering of paper on the top, leaving room for more straw before tying the lid. Good clean dry straw should always be used.

The worth of feathers from a goose is 4d. to 5d. per bird: from a white duck the feathers are worth 3d. per bird: from a grey duck 1½d. per bird. It is in keeping the feathers separate that the gain lies, for 20 lbs. of white goose or duck feathers are worth about 28/- whereas 20 lbs. of chicken feathers are worth 3/4. Many people mix goose and duck feathers with chicken feathers, often including stiff wing-feathers, and mixed in this way they are worth only 1d. a lb. All quill feathers should be thrown out and white kept apart from grey or other colours.

PACKING EGGS FOR MARKET.

In packing eggs for market the "long hundred" is 120.

In packing a box of eggs nothing but very clean straw should be used, as nothing that has gone at all musty will impart a flavour to the eggs. A layer of straw should line the box and the eggs be packed closely together so that it is impossible for them to roll, and another thick layer of straw placed over them, then another layer of eggs until the box is full, keeping a stated number in each layer. The eggs should be as nearly as possible the same size ; if small ones are mixed with large ones, the price returned is as for the small ones. A good marketable egg weighs 2 ozs. to 2¼ ozs. For speed and facility we recommend the patent egg-carriers which are used on most progressive poultry farms, and are obtained at appliance makers.

PACKING SITTINGS OF EGGS.

These are more conveniently packed in specially made cardboard boxes, in which as a rule they carry very safely. The other method is to procure a light box, line it with hay, and roll each egg in a square of paper, then twist round it a wisp of hay, and place them side by side in the box to within an inch or so of the sides. Fill in every niche with hay and sheet of paper on the top and a layer of hay and proceed with the next layer of eggs until the box is almost full, completing it with a thickness of hay on top. Then screw or cord the lid, but do not use nails. For exporting, this box should be placed inside a larger box lined with hay, and corded on the outside with a loop left to suspend it to a hook in a cool portion of the vessel, excluding the cold chamber.

Read,
Advertise in and Recommend
The POULTRY WORLD
1D. WEEKLY.
Free Specimen Copy from Publisher
154, Fleet Street, London
E.C.

CHAPTER XX.

TRUSSING POULTRY.

TRUSSING FOR TABLE—DUCKS AND GEESE—THE SKEWER METHOD, ETC.

In private trade it is very necessary to be able to truss poultry attractively, a nicely trussed fowl commands more money than one trussed indifferently. Fowls sent to the dealer are rough-plucked only, not trussed.

TRUSSING FOR ROASTING. (WITH STRING).

Take the plucked and singed fowl, lay breast downwards on the table, pinch up the skin and cut a slit across the back of the neck, making the cut towards the head, this is to leave a flap to cover over the neck when it has been taken off. With the poultry knife make a deep slit up the outside of the shanks to expose the sinew. Pass the point of the steel or stout skewer under the sinew and out again on the shank, which will lift the sinew above the shank, now twist the skewer round, and having got a good grip, pull down from the hock, and the sinew will leave its attachment high up in the leg and come clean out. With the point of the knife cut off the neck close to the shoulder, withdraw the stump. Cut off the head, leaving enough skin to reach to shoulders or the middle of the bird's back now pull away the bird's crop, twist it round the finger, and pull well to loosen the internal organs, pass the forefinger into the body and feel for the lungs, which lie embedded in the back, scoop these loose, but do not withdraw them, now run the forefinger right round from the back (inside) round the breast, and loosen all strings or attachments that come in the way until the finger has completed the circle. Turn the fowl on its back, and cut across between the vent and tail-piece, insert the two fore-fingers and loosen the intestines, which hook out without breaking, (dont detach) this leaves more room for the fingers to be inserted higher up to hook round the gizzard,(and if possible the liver and heart), and withdraw the gizzard, which should come away with the heart and lungs attached, now cut off the intestines at the vent, cutting out the vent too. Properly done the bird requires no washing, but if the intestines should break, wipe out with a cold wet cloth.

Now take a long 8 to 10-inch trussing needle (an ordinary packing needle is a good substitute) and some clean white string. The bird should now be placed on its back and the thighs should be pressed down level with the table, pass the needle through the fold of the legs, right through the body, and out between the fold of the legs on the opposite side, now turn the bird on its breast, spread out the wings, then close them up to the body, the small end-piece of the wing will then be pulled up and across the neck and shoulders, where it clips, and keeps its position. We now pass the needle between the bones of the second joint of the wing from the outside, as it comes through, the joint should be taken through the bones of the small end-piece which is folded back, the needle carried on to the next wing end, and through this and the second joint, just the reverse way to the last motion, as one is left and one right, and the needle should then come out through the second joint of the wing, and near to where the needle was first inserted in the body. The two ends of the twine are then tightly tied together. Liver and gizzard should then be placed in the fowl. The needle and twine is then passed through the thigh bones (a natural hole will be found in these), from one side to the other and the ends of the string tied tightly over the thighs, just below the hocks. Cut off the legs and the bird is trussed. Liver and gizzard are packed inside the bird.

THE SKEWER METHOD.

Prepare as before up to the point of using the needle, now take the bird, place hocks on table and force the thighs back until they are well above the back, pass the skewer through the two bones of wing near the elbow, then right through the fold of the leg and thigh and across the back, at the same time looping it through the neck flap which it secures in position, and on through the other leg, and angle-joint of the wing. Make a slit in the web of the wing and pass through half the liver and half the gizzard, one under each wing, and fold the wing end back over the neck as before, thus securing the liver etc. in position. Take the twine and needle, pass the needle through the flesh below the end of the breast bone, and detach the needle, take the loose ends and tie tightly over the thighs near the hocks, now take the loose ends of the twine, and tie very tightly round the tail-piece, finishing off with a bow that can be easily undone by the cook for stuffing the fowl. The other method is to take a skewer, and pass under the muscle above the hock, on the under side, and pass right through the pelvic bones out the other side, and through the other leg just above the hock. The hole left by cutting out the vent is now pulled over the tail-piece, and the bird is ready for sale. Turkeys are trussed as fowls, either method.

DUCKS AND GEESE.

In preparing ducks and geese for trussing the same mode of procedure should be adopted as for fowls, except that as a rule the sinews are not drawn. (They can be, of course, and advisable in old birds). Assuming that the carcase is now devoid if its internals, we take the duck, and cut off its wings at the first joint from the body. Take the feet and cut off the back toes, now nick round the pad of the foot, and the skin round the outside of the toes, take a firm grip of the pad, between the blade of the knife, (inserted under it) and the thumb, and pull off the whole of the sole of the foot, leaving the stripped toes and web. Lay the duck breast downwards, legs spread out on each side of the tail, and, keeping the hock close to the table, bend the foot the natural way under the thigh, but keep the hock level with the table. With the finger and thumb between the thigh and tail-piece, lift the foot through, and spread the under side of the foot over the back, When both legs are done, thread a string through the hocks, and pull up close to the body, tying the string and passing over the back. The vent having been trimmed round, and the neck, liver and gizzard placed inside the duck, pass the vent over the tail-piece. The loose wing stumps may be skewered to the sides of the bird with short skewers. Another method is to skewer the thighs behind the back as in case of a chicken, then fold the feet behind the back as described.

Geese should be treated the same way. Christmas Geese often have the wings strongly secured by a piece of tape or ribbon ½ inch to an inch wide, right round the body, this makes an effective finish.

CHAPTER XXI.

A SPRING DAY'S WORK ON THE FARM.

Going forth in the early morning, the first visit is to the food room, where the food steaming-hot from the cooker will be mixed with the necessary dry meals, after which it will be distributed to the flock, commencing with the chickens during the season, then the stock birds, and finally the laying stock. If there are two or more persons working on the farm, one will fill all the water vessels. By going together a lot of time is saved that would be otherwise wasted in opening doors. The birds in the fattening coop will now be trough fed, and those in the final stage crammed. After an interval for breakfast, correspondence will be glanced through, labels written for baskets of birds, or sittings of eggs that need immediate getting up, dispatch, and all commissions duly executed. Washing show birds must now be seen to. The sitting hens will then require attention, and then the incubator house must be visited, the eggs turned, and hatching chickens transferred to the brooder house, or small brooder. Machines that have completed hatching will now be refilled or not, according to the working plan. By this time the small chicks will be ready for a second meal. All the brooders or brooder-house and poultry-houses due for cleaning will now be seen to, and if time allows, any repairs or painting necessary can be undertaken, and the chicks receive their third meal before a stop is made for dinner or lunch. When dinner-time has elapsed, some days there will be birds to kill and pluck, and placed in the pressing trough, in other cases, they will be trussed for delivery locally or packed and dispatched by post. About 3-30 the chicks will receive their fourth meal. 4 o'clock is the best time for tea on a poultry farm, after which lamps must be trimmed and filled, and every thing fed and watered. Eggs will be gathered, washed if necessary, and packed, and got to the station in time for the evening train, arriving at their destination next morning.

This accomplished, shut up the chickens to secure from rats, and also adults from foxes when necessary, take another look at the outside brooder lamps to see they are not smoking since trimming an hour before, and go into the incubator house, turn the eggs, test all that are due for testing, glance round at the lamps, and so by 7 to 7-30 the poultry man is ready for his supper, and his employer his dinner.

THE NECESSARY BOOK KEEPING.

After dinner or supper the inevitable poultry paper or book comes forth, and the necessary book-keeping for the day brings a long but pleasant round of duties to a close. The work must vary with every month of the year, in the winter the hours will have to be altered, and the poultry-keeper will have his breakfast in the dark before going out at 7-30 to 8 for the day's work. At the same time of the year 4 o'clock will be his busiest time, and the tea hour will have to be deferred. A plan for feeding should be drawn up, and tacked to the door of the food house, also outlines of general management, so that work may go on with methodical *regularity*, the feature which spells success in the management of a Poultry Farm.

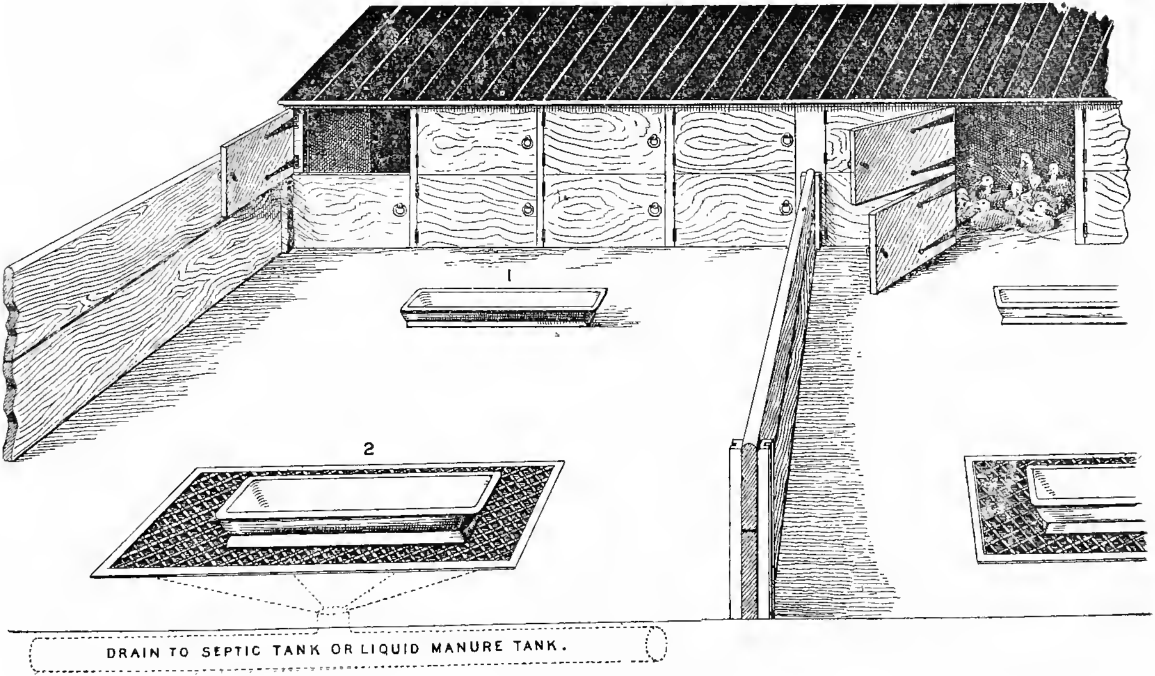
CHAPTER XXII.

THE MOULT.

HOW TO POSTPONE OR ADVANCE THE MOULT.

The Moult is the annual change of feathers, not counting the stages of feathering in chickenhood. As a rule the moult begins in July, that is, some birds may begin to moult then, some a little later, but from July to September is the moulting season. The process of moulting all the old feathers may take different lengths of time, varying from six weeks to three months, in some cases it is advisable to postpone the moult, in other cases to help it on and thus get it over. In a flock of laying hens from which the poultry keeper desires all the eggs he can get before selling them, it is more profitable to postpone the moult. By feeding freely the moult may often be checked, and as the birds are to be sold it does not matter if they do become too fat. Begin by giving a slightly increased allowance of food, and gradually increase it until the birds are having as much as they can eat every day of the fortnight previous to their sale. This course will mean many extra eggs and more marketable birds when the time comes for disposing of them.

Those wishful of producing the moult can do so in the majority of cases by keeping the birds very warm. If they are kept in houses or coops that receive the full power of the sun, and are strictly confined to them, it will do much to induce the moult. The birds should also be fed on hard grain only, and a very small quantity night and morning, not half their usual allowance. All their drinking water should be made saline by adding a teaspoonful of Epsom salts to every pint, previously dissolving the salts in warm water. It may take a fortnight or more of such treatment to produce the moult. Examine the birds now and then, and when new feathers are noticed under the old hackle and other parts, and feathers bestrew the floor of the house, the moult has begun and the feeding must be altered, the birds being gradually brought on to their usual feeding. Any sudden return to liberal feeding however will only result in the moult being CHECKED.


1
2
DRAIN TO SEPTIC TANK OR LIQUID MANURE TANK.

HOUSES AND YARDS FOR MARKET DUCKS.

CHAPTER XXIII.

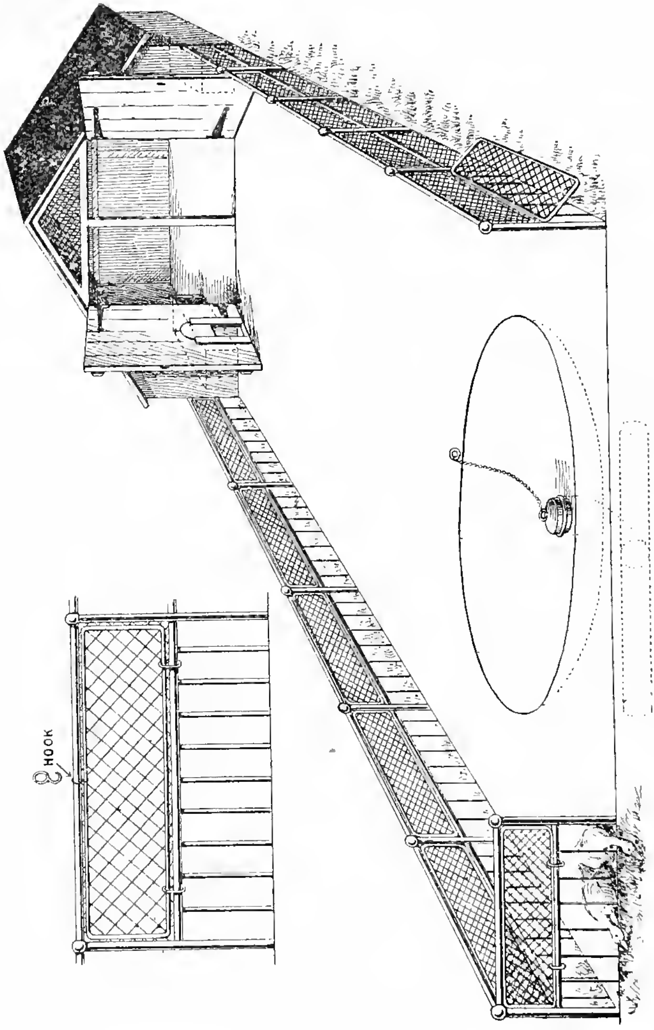
DUCKS AND DUCK FARMING.

ADVANTAGES AND DISADVANTAGES—GENERAL MANAGEMENT—METHODS OF REARING—ARTIFICIAL HOUSES—WEIGHT OF STOCK DUCKS, ETC.

It is only in very rare instances that we can recommend duck farming to be taken in conjunction with poultry farming, for it is far better conducted as a separate business, since it is a business that requires a rather different class of man to that required for poultry farming, and certain natural conditions to make a success of it. The great bugbear poultry farmers have always had to contend with has been tainted land, and as the majority of poultry farmers have to manage with rather less land than they would like, we cannot advocate ducks, which taint land far more quickly than any other class of poultry. So when the holding is a small one, under five acres, I should not recommend much in the way of duck-keeping, and if any ducks be kept, it should be with the idea of keeping together a private trade rather than to make much money from it. Not that money cannot be made from duck farming, but it needs suitable conditions.

STOCK DUCKS.

Stock ducks require a house with a good boarded floor, and it is often necessary to have small mesh wire netting underneath this in order to be secure from their inveterate enemy, the rat. We are adverse to door sills, and like the door to open flush with the floor of the building as ducks are so easily injured if they have to climb anything in the way of steps. When the floor has to be raised to render the apartment waterproof a broad gangway should be used with strips of wood across every two inches to prevent slipping, and the gangway should be the full width of the doorway. The usual small round hole through which the ducks are supposed to " loop the loop " is not by any means up-to-date,



A DUCK HOUSE WITH RUN AND ARTIFICIAL POND.

and two doors after the style of a coach house that can be flung wide open to allow of the whole being swept out easily are the best form of ingress, or egress.

The doors should be made to hook to a post so that they can be kept open the whole of the day. In the matter of nest boxes the duck is somewhat difficult to please, usually laying its eggs in the litter and covering them from sight.

The duck house should be six by five feet for a team of five birds, the remainder being devoted to wide doors three feet four inches in width or double doors twenty inches each in width, as most desired. The door should have a six-inch aperture along the bottom which should be provided with a frame covered with one inch mesh wire netting. The house should be provided with a pair of doors for summer use, composed wholly of wire netting, these could be hinged inside the solid doors.

METHODS OF REARING.

Broadly speaking, there are two methods of rearing ducks for market purposes, one is with housing, and the other is without, and it would all depend on the climatic aspect of the district and its liability to vermin and foxes or thieves, as to which system should be adopted. At one of the most successful duck plants in the world the ducks are reared in the open after they are old enough to leave the foster mother. There need be no permanent fences on a duck farm of this description, netting eighteen inches in height, of the small inch mesh variety, should be bought in rolls, and thin stakes anything from 2-6 in length which are driven into the ground with a mallet, thus a fence is readily erected by threading the stake through the netting, and it is just as easily removed by rolling it all up after the stakes are pulled out of the ground. This method is a great convenience when changing the ground, which is very necessary in duck farming.

Two fifty-yard rolls will thus construct a pen 25 yds. each way in which about eighty ducks can be reared to maturity. As a rule ninety or so are placed in such pens or the hatch from a hundred-egg incubator, but through mortality they are generally reduced to not much over eighty before the market age is arrived at. It naturally follows that this system of rearing can only be adopted during the warm months of the year and only then on fairly low-lying land which has some provision from strong winds. A large number of these pens could be mapped out leaving a central passage through which a cart could pass and distribute water and food.

Another system is to have a long low shed with apartments about 10 feet in width and divided off by low partitions which one can step over. The partitions may be solid timber, (two 9 to 12 inch planks stood on edge between stout uprights, fastened to the sides of the building so that they can be easily removed for swilling down), or they can be simply wire netting, but for many reasons we prefer creosoted boards. In this case the size of the pens should be graded, the first being five or six feet and the others graduated up to 10 by 12, so that the ducks can be moved up as they grow. On the indoor system about fifty in a flock or a few less give the best results.

The young ducks should be started off in the smaller pens and gradually moved up, in fact, if need be, the foster mother can occupy the first compartment, thus making the unit complete in itself. Where more ducks are required than this unit would accommodate, several on the same plan might be arranged in close proximity to each other. Small outside runs could be placed back and front of this building, so that the broods could be taken through without occupying one run twice in a single season. The outside runs could be made either moveable or permanent as the owner desired. Moveable ones are best, because after each duck season both front and back runs can be ploughed up and sown with rape seed or rye or some other green crop to sweeten it. The mode of fencing the runs will be seen in the accompanying plans.

Another system is to lay the outside runs with gravel (rolled hard) or to have a tiled or cement floor, and allow the ducks on this paved portion for feeding and watering, taking care that these runs are drained to a channel on the outside of the place so that the whole can be swilled down with a hosepipe if necessary. The birds would be driven back to their sheds immediately after they are fed, and as the sheds would be bedded with peat moss, straw or some other easily removed litter, duck farming could go on in a sanitary manner for a lifetime without anxiety as to tainted land.

The position of the house should be as near to a pond or water range as possible, and when there is not one, we advocate the introduction of an artificial one, but if this cannot be done, all duck eggs required for incubation purposes should be bought.

ARTIFICIAL PONDS, ETC.

When permanent artificial quarters have to be provided they had better be composed of cement and the whole raised a couple of feet above the surrounding land, so that perfect drainage can be provided at one end of the little yard, which should be 10 by 6 as a minimum. A hollow cemented tank 18 inches in depth should also be provided, it should not however be the ordinary tank shape, but should slope gradually down to a flat floor from the sides so that the ducks can easily walk out without having to climb over any edges. This little water bath should be at least 4 by 3 feet, and should be placed at the opposite end of the run from the house, so that a lot of the moisture will run off the ducks as they go along and not be carried into the pen. In the centre of this bath a fairly wide pipe and plug can be placed so that the water can be drained on to the land or into a vessel for removal. The pond would have to be filled from a water cart unless it were within easy reach of a hose pipe, which would be best, as the whole yard could be swilled down two or three times a week by this latter implement.

The proper way to fence this pond would be by letting into the cement slender iron uprights, which would have to be some inches from the edge to hold, perhaps a better way would be to drive them into the soil at the edge of the concrete foundations, and plant a border immediately outside them of rape seed or cabbage etc. These crops could be cut and given to the ducks as required, or if any prefer the ducks to feed themselves the fence can be composed of hurdles on which would be fixed wire netting frames which would button on the inside and hinge back or take down at any time to admit of the ducks feeding on a four ft. length of the green food the other side, and as one patch was eaten off they could be shut off and opened on to another length.

VARIETIES.

As this book is not devoted to ducks we will come at once to the varieties for commercial purposes, which are Aylesbury and Pekin, successful farms being run with either species, but by far the greater quantity of ducks which come to the market are a cross between the two. Which way they are crossed is immaterial except that perhaps Pekins lay most eggs and crossed with an Aylesbury drake a good team can be got together. About four ducks to a drake is the usual number.

WEIGHTS AND AGE.

A stock duck should be a good weight, for large young ducks cannot be expected from small stock ducks. Full growth may be said to be obtained when the wing feathers cross each other over the stern, once they touch each other they are practically ready, and from that stage onward, three weeks, until the wing feathers are so long that they cross, is the utmost limit they should be kept or they will drop into moult which is fatal from the profit point of view to the duck-farmer. At that time a very small duck is better cleared out for what it will make as it would be another ten weeks before it got into condition again. The colour of duck eggs is no criterion as to breed. Cream, pearly, or green eggs are common to all varieties, and none of the ducklings are white when hatched, but generally canary colour.

It is possible to distinguish a duck from a drake by going behind them rather sharply, hustling them as it were, or trying to catch them, the ducks will emit a loud quack but the drake has thin poor tone, when old enough there will be the curled feather in the tail to mark the drake.

WEIGHTS OF STOCK DUCKS.

For the early duckling business young ducks must be used, those hatched in February or March being the most suitable, but an old duck is not to be discarded for it will come on to lay in February and be in time for the majority of duck keepers. A good duck is prolific for three or four years. A good stock duck should weigh six to seven pounds and a drake seven or eight pounds, the greater weights are not particularly desirable unless the birds are very active and have a good range. Young ducks can be grown from such parents to weights of four pounds at eight or nine weeks old, but the weight to be aimed at is an average weight of 4 to 4½ pounds at ten or twelve weeks, greater weights are obtainable, but we are speaking of the average. Practically the worst of the ducklings should be out of hand before twelve weeks old, and eighty per cent will lay at ten weeks old. Occasionally ten to twenty per cent can be got off hand at eight or nine weeks if they have made exceptional growth.

REARING DUCKLINGS.

For the first week feed every two hours: either

(1). Biscuit meal soaked in milk and given as it is, or dried off with oatmeal, or

(2). Bread and milk as it is prepared for chicken, or

(3). Finely ground barley meal and half as much again ground oats and middlings mixed into a crumbly condition with hot water and milk, or

(4). Bread crumbs moistened with milk and dried with oatmeal.

A little finely chopped green stuff should be sprinkled over the soft food, or on the water vessel. The water vessel should be such that the ducklings cannot get into it, but should be large enough for them to immerse their heads.

Drinking water should be supplied from the first.

FROM ONE TO FOUR WEEKS OLD.

Feed five times a day. All the meals should be soft food, and any of the following are suitable, though it will be readily understood that they may be varied, according to circumstances, and that we do not imply that all the foods mentioned must be given.

Feed as early, also as late in the day as convenient, arranging the meals as nearly as possible an equal distance apart.

(1) Scalded bran and biscuit meal, and as much again middlings or thirds.

(2) Bran, scalded with meat liquor and mixed with two parts middlings and one of oatmeal.

(3) Rice is largely used in rearing the celebrated Aylesbury ducks. It is prepared as follows:—One pound of rice 1½ pints of water, ½ lb. of greaves; cook until water is absorbed. Mix with 2 lbs. of pollard, or middlings, or ground oats, and ½ lb. of maize meal. The "Paddy" rice is rice with the husk on, which can be bought for less than one penny per pound. The "Greaves" are a dry meat product; "crissel" and granulated meat are similar in nature and can be used.

(4) One part cooked lean meat or fish, two parts bran, four parts thirds or middlings, and one of maize meal is another good ration. We would here mention that fish, offal, such as fish heads, shrimp husks,, also sheep's paunches are all cheap and useful foods, and can at any time be used instead of greaves. The rule with fish or shrimps is that they should be discontinued for a month before the duckling is marketed.
Green food in some shape or form daily.

FROM FOUR TO EIGHT WEEKS OLD.

Feed four times a day with any of the rations referred to, or now and then boiled wheat. Animal food is most essential, and fish heads (bones and all) can be utilised by being passed through a meat mincing machine. Sheep's paunches or pluck, or any waste table scraps, can be served in the same way. In fact nothing need be wasted where a duck is kept. Skim milk mixed with the food rather lessens the amount of animal food required, so it behoves the duck raiser to see which fits in most economically. Three pounds of fish or meat can be allowed to every ten pounds of dry meals.

Green food daily, unless on a good grass range.

FROM EIGHT TO TWELVE WEEKS OLD.

Give three meals per day. The market ducklings are now ready for fattening, future stock ducks should not undergo the fattening process. Three meals a day are sufficient, and the largest ducklings can be sold off at eight to ten weeks old, some few require a fortnight longer, but all market ducks should go at twelve weeks at the latest.

(1) Equal part of Sussex ground oats, fine middlings, and barley meal, mixed in dry condition in a bucket. Pour on a little melted fat (allow ¼ pint of liquid fat to every 5 lbs. of dry meal). Pour over the fat the scalding skim milk or other meat liquor, or hot water required to mix the whole into such a stodgy mass that it would turn out like a sand pie. Do not give until nearly cool.

(2) Boiled Potatoes mixed with middlings two parts, barley meal one part, and some fat is another cheap fattening food. Potatoes can also be added to the former mixture.

(3) Ground oats and skim milk and a little fat with cooked rice, is another useful ration.

(4) Crammings or middlings, with a little fat, milk, and hot water, also give nice white flesh, but are improved by adding finely ground barley meal.

Even whilst fattening, a little green food tends to keep the birds in good order and the appetite well up to the mark.

INTENDED STOCK DUCKS.

Birds that are intended for stock purposes should be encouraged to lead a natural life and take to swimming as early as possible. At first their meals should be frequent, but less in quantity than the market ducks, so that they will range about more. After they are three months old, grain, such as good oats, may be given at night, if on a good water range they will only need a light breakfast besides. In the majority of cases three meals a day are necessary for the best results. The noon meal can then be varied, either grain or soft food. The amount of animal food allowed must be governed by their owner. Needless to say, when there is a pond or stream with frogs, tadpoles, or young eels, no animal matter or fish will be required at all. I have known cases where it was necessary to allow the ducks on the stream for only two hours daily. It so teemed with young eels etc., that nothing but soft shelled eggs were laid whilst the birds had access to it, this was a very extreme case.

REMARKS.

The water vessel should never be dry. The ducklings should have a trough of sharp sand or fine grit near the water trough, to which they can help themselves at will. The ducklings should be kept nice and dry at night, and the less they are disturbed the better. Visitors should not be encouraged on a duck farm, and dogs not allowed about at all. Only a limited amount of water should be supplied whilst the ducklings are fattening. They should have a bath a day or two prior to being killed. This is very essential when no water range is available. Food should not be left about between the meals. Waste food from hotels is very excellent stuff for ducklings.

RATE OF GROWTH OF DUCKLINGS.

Weeks	1	2	3	4	5	6	7	8	9
Ounces Minimum	2½ to 3	4 to 5½.	6 to 7	1 lb. 4 ozs.	2–0	2–8	3–2	3–10	4–2
Ounces Maximum	2½ to 3	5	7	1–4	2–6	2–11	3–5	4–0	5 to 5½ lbs.

The above represents the average rate of growth of market ducks. Aylesbury-breds. The maximum and minimum weights of birds from one flock.

Note. Heavier weights for age are frequently made, the above are strictly average usual market white ducks.

CHAPTER XXIV.

GEESE

THEIR MANAGEMENT AND FEEDING —VARIETIES COMPARED —REARING—FATTENING, ETC.

The commercial poultry keeper will not be concerned with the antiquity of geese, except as they affect the pocket. That they are written of as far back as the B.C. era, will not trouble him, though the knowledge that the prominent men of that day were fond of the goose and the Goose Liver, may be of interest.

The principal varieties (Commercial) are:—The Toulouse, Embden, Canadian, Chinese or African.

The standard adult weights of these are (average weights rather less):—

	Sitter	Egg Production	Rate of Maturity	Weights Male	Female
Toulouse	Practically non-sitter	Excellent	Slow	28 to 30	20 to 22
Embden	Good	Moderate	Rapid	30 to 34	20 to 22
Canadian	Sitter	Moderate	Medium	12 to 14	10 to 12
Chinese or African	Fair	Very good layer	Rapid	18 to 20	16 to 18

THE TOULOUSE.

Shape. Long, broad and deep in body, very prominent and deep breast, showing loose flap hanging from breast known as " keel," which should be very deep. Broad in back, slightly curved from head to tail. Very deep and square in stern, well spread tail, extremely deep " pouch " or bag. Short stout legs, under belly a deep pocket or pouch, known as " Gullet." Colour. Orange bill, dark brown or hazel eye, orange legs and feet. Dark grey plumage, rather lighter towards the thighs. Back and wings dark steel grey, each feather laced with almost white lacing. Flight feathers should however be grey and free from white, Tail, white, with broad band of grey across the centre. Horizontal body carriage.

EMBDEN.

Shape. Long and swan-like in neck. Broad in body, very long in back and body, perfect freedom from keel, a full, well-rounded breast. Clear under bill, no indication of gullet. Straight back. Deep paunch and broad stern. Fairly short legs, smart upright carriage.

AFRICAN OR CHINESE.

Easily disingtuished by the " knob " on the bill at its juncture with the head. Upright in carriage, deep and fairly long in body, well rounded prominent breast. No keel, moderately deep in haunch. Gullet should be prominent. Colour, bill orange or dark brown, almost black, legs bright orange. Knob usually dark or black. Head, neck and under parts, yellowish grey, lighter towards the bottom of the breast and stern where it finishes up practically white. Dark brown stripe down the neck. Back dark grey almost a brown.

CANADIAN GOOSE.

Shape. Long body and neck which merges into a full breast, body getting gradually deeper towards stern, no gullet.

Colour. Head, neck and bill black, except for a crescent shaped white patch, the horns starting from the backs of the eyes and going well under the throat, where neck joins shoulders the back finishes in a straight line, the breast greyish white. Under parts pure white. Flanks are a mixture of grey, black and white, black quills, and grey and white web. Back and wings, dark brownish grey, dark tail, light rump. Legs rather long, carriage upright.

STOCK MANAGEMENT.

For breeding purposes one gander and three geese is the number that gives the best results, except in the case of

Canadian geese which generally pair. Geese when very long-lived can be bred from, for a great number of years, though they are considered at their prime between the ages of two and twelve years old. Young birds commence laying early in February and lay practically the bulk of their eggs before the first of May. In exceptional cases and late hatched birds they may lay later in the season. The Toulouse gives anything from 15 to 50 eggs in the season. The Embden is however, more disposed to lay the eggs in two hatches, a small one of seven to eleven first, and from 10 to 15 or 20 at the second instalment, and for getting the greatest number of eggs she is not allowed to sit at the first batch.

GEESE AND THEIR REARING.

Goslings are hardy little things, provided, of course that they have descended from healthy parents, but the progeny of fat geese, or those kept in very limited quarters, are very difficult to rear. Intended stock birds require rather different rearing to those intended only for market purposes.

THE FIRST WEEKS.

Feed every two hours with any of the following soft foods, which be varied as desired, the more changes the better.

(1) Biscuit meal, scalded and allowed to cool, and given without any addition.

(2) Biscuit meal, scalded and dried off with fine middlings, or Sussex ground oats.

(3) Boiled cracked wheat, cooked in milk when possible and dried with oatmeal.

(4) Rice, served in the same manner.

(5) Stale bread crumbs and milk, given crumbly, not sloppy.

(6) Any of the soft foods advised for ducklings.

FROM SECOND TO FOURTH WEEK.

Feed five times a day. Soft food should still be the staple fare. Equal weights of bran and biscuit meal, which scald, and dry off with double the weight of fine middlings or ground oats. Or equal measures of bran, biscuit meal, pea meal, barley meal, and middlings. Or cooked rice or wheat, mixed into a crumbly condition, with ground oats and a little barley meal. Or cooked green vegetables three parts, bran three parts, maize meal one part, middlings two parts. Any of the above can be used as convenient.

FROM FOURTH TO TENTH WEEK.

Feed four times daily. The first three meals a day can be soft food, the supper, grain. Any of the soft foods advised can be given, and for goslings that are going to market, potatoes and other vegetable matter can be added to the mash. Wheat, cooked in meat liquor and mixed with ground oats and barley meal, is excellent. Or any cooked vegetables (cook a little wheat with them), and bran; dry the whole off with two parts of middlings and one of maize meal. The vegetables may constitute one third the entire mash. Malt culms can be used instead of bran, or brewers grains. Sound wheat, plump barley, or good oats for supper; if these have been steeped in water all the afternoon all the better.

INTENDED STOCK GEESE.

These should not be fattened, but when three months old allow them to forage for a great portion of their living They will require very little soft food, which can be of the unsound description. Cooked wheat, bran, middlings and a little pea meal, the whole mixed with skim milk or hot water, or meat liquor. Other mornings a moderate feed of oats may be allowed. The goslings should then wander at will during the day. On their return a good supper of oats or wheat should be allowed.

"FOLDING AND STUBBING."

At three months old market geese can be turned on to a turnip field, confining them by hurdles to a certain portion if desired. It lends to better results to give a slight meal of oats once a day, say at the time when their water vessel is attended to, for they will need water. Geese can also be profitably employed on the stubbles after the harvest is over, and in this case all they require is a trough of water and perhaps a few split turnips or a few heads of cabbage by way of variety.

FATTENING GEESE.

Feed three times daily. Christmas stock should be allowed three weeks for fattening. Good rough feeding will answer such as three meals a day of cooked potatoes, a little bran cooked in meat liquor, and the whole mixed up with equal parts of maize and barley meal, and double the amount of middlings, sharps, or crammings. A little melted fat should be added and this should be increased as the date of killing draws near. Boiled wheat or oats, or good plump barley, will make an acceptable supper dish. For better class birds, ground oats and skim milk, and just a little barley meal and melted fat, will be the best ration to use, and perhaps a good supper of stout white oats placed in the trough of water.

REMARKS.

Goslings should not be kept on a cement or greasy wooden floors, as they lead to serious leg troubles, unless adequately covered with dry litter to provide a good foothold. Drinking water is required from the first day and a grit trough should be somewhere near it. Goslings can be allowed to graze a field with sheep. They can do without a hen at ten days old. "Green" geese are young geese usually put up to fatten when eight or ten weeks old. Goslings form strong friendships, and each lot should be kept together until killed, to separate or kill a few off would rather spoil those left. Young should be kept under cover in very wet weather. Goslings should not be allowed to stray far away from the coop for the first ten days.

The Embden-Toulouse Cross is an excellent market cross, goslings of the year often reaching 20 lbs. weight, or over if hatched early in the season.

CHAPTER XXV.

TURKEYS.

MATING—FEEDING—MANAGEMENT—VARIETIES—FATTENING, ETC.

The Turkey is a line that should not be attempted on small farms, though there is an increasing demand for it, and those farmers with a great acreage are the people whom it would pay to cultivate them, often much better than egg production. For farms of such dimensions are usually far removed from a station, and the prices of eggs very low. The principal commercial varieties are :—

THE AMERICAN BRONZE.

The giant of the turkey family with a standard weight of 36 lbs. for cocks, and 20 lbs. for hens. These large birds are extremely deep in body, very full and well rounded in breast. The back is not straight but curves gracefully to the tail. The wings should be very large and powerful. In the centre of the breast of the cock is a tuft, or beard, which should be very prominent. The tail droops almost to the ground. All turkeys have a peculiar head and neck, being covered with fleshy looking lumps, known as " Carnuneles." These in a young bird are at first grey in colour, until a certain age when they turn red, and may be an intense red, or may fade away to a blue grey hue according to the health and temper of the turkey.

Colour of Bronze: Beak, light horn to dark. Hazel eyes. Legs and feet black and kid, in a young bird deepening to brown, and afterwards a pale flesh colour in adults. Plumage, over all a brilliant metallic bronze should be seen. The primary and secondary feathers of a bronze are pencilled across with white or grey tail ; here some white shows, as the feather is black, pencilled with bands of brown, finishing with a broad black and bronze band, with a further edging of white or grey. In a show specimen these colours should be very distinct. The bronze is a big framed bird, carrying a lot of breast meat, and is a very useful market bird. Perhaps hardly as good flavour as some of the smaller varieties, but certainly a commercial turkey.

THE NORFOLK OR BLACK.

Colour: beak, dark horn or slate black. Eye, hazel. Legs and feet, dark lead or slate black. Plumage, lustrous black throughout. Very fine texture of flesh and excellent flavour.

THE WHITE.

Colour: beak, pink or flesh. Legs and feet, white or pink. Beard, (cock's) deep black.

Sub-varieties are :—The white Holland, the Buff or Fawn, and the Blue.

THE CAMBRIDGE TURKEY.

Colour, although slightly glossy, has nothing like the sheen of the Bronze, on the whole a dark dull colour, with here and there white or grey splashes, the wings and tail being regularly barred with grey or white. Beak, flesh coloured. Legs and feet, grey, with the nails the same as the colour beak. Weight, cock 20 to 24 lbs., hen's 14 to 16 lbs. Very fine texture of flesh, extremely suited for British markets. In shape it differs from the bronze in being more cobby, and shorter in body, and not nearly so deep in breast, having no keel or pouch.

	Cockerels.	Pullets.	Cocks.	Hens.
American Bronze	22 lbs.	[illegible]	36 lbs.	20 lbs.
Cambridge	16 ,,	[illegible]	24 ,,	
Norfolk or Black	18 ,,	12 lbs.	27 ,,	18 ,,
White ..	16 ,,	10 ,,	26 ,,	16 ,,

THE MATING OF STOCK BIRDS.

It has been abundantly proved that age has a great economic bearing on turkey breeding, as the turkey takes two or three years to mature properly. This is no mere fad, the practical reason being that the progeny of two years or older birds will weigh anything up to five pounds per bird more than the progeny from one year old birds, which apparently consume the same amount of food. With turkey flesh at 1/3 per lb. the financial aspect is worth considering.

The number of females to the male, or " Tom " or " Gobbler," varies with the individual and the extent of their range. With a good range up to 10 birds may be allowed, others prefer 6 to 8, the latter number is a safe average. The turkey hen or pullets may begin to lay in Feb., though late in March and early April are the more usual times. A good average number of eggs is 15 to 20 per bird, generally given in two batches. The first batch should be given to a hen to sit, and the turkey be confined to a coop for a day or two until the desire to sit is broken, and she will commence to lay the second batch. Sitting turkeys may be treated just the same as sitting hens. Some prefer to allow the turkey to choose her own nest, and place a floorless coop over her, which prevents her being disturbed, but as the nest may be at a distance the plan has its disadvantages. A turkey hen will rear a couple of broods, (25 to 30) chicks, so that she might take the chicks hatched by a hen. The gobbler is best kept away, as some possess the cannibalistic propensity of eating the chicks, or the eggs from which they should come. A good stock cock of 25 to 30 lbs. weight, and pullets 14 to 16 lbs., as a rule yield a good clan of market stock. Endeavour to have age on one side of the pen, such as a 2-year-old gobbler to poults or two-year-old hen to young gobbler.

Turkeys for exhibition purposes should be bred from birds near to their own standard weights. Green food, animal food and grit, are great essentials to successful turkey rearing.

TURKEY REARING.

The secret of getting little turkey chicks well on their feet lies in frequent feeding at short intervals during the early days of their lives. Although they may be hatched at noon they need not be fed before the next day. As is well known turkey chicks are not apt pupils at meal times, and many breeders try to have a chicken or two ready, often by putting a few hen's eggs amongst the turkey eggs after the latter have been set for a week. The cross bred chickens soon teach the turkey how to feed.

FROM ONE TO THREE WEEKS OLD.

Turkey chicks should be fed every two hours during the day, the first meal as early as possible in the morning, and the last meal while there is just light enough for them to see to eat. There are many ways of feeding turkeys; most rearers prefer to use soft food. Begin the day then with a breakfast of soft food. All the following are good.

(1) Custard is a great favourite with some; beat up raw eggs with milk and cook until it becomes set as custard.

(2) Stale bread crumbs, moistened with milk and dried with oatmeal.

(3) Biscuit meal, scalded with milk when possible, and then dried off with fine middlings or ground oats, or oatmeal.

(4) Milk curds, with water squeezed out. Very stiff oatmeal-porridge made with skim milk, and with oatmeal stirred in as it cooks until the whole is a thick, almost crumbly mass; give when nearly cool.

(5) Bread and milk, as prepared for chickens, is also a capital change.

(6) Rice, boiled with skim milk and rolled in oatmeal. Here then are a variety of suitable mashes, any of which can be used as opportunity offers, and the more changes the better. On the second day commence adding a little chopped green food to every meal, begin with a small quantity, and gradually increase as the chicks get older.

On the third evening a few broken groats can be added to the last meal at night; gradually a few more until at the end of three weeks the poults are having nothing but whole groats for supper. Small wheat or "Dry Feed" mixture can at any time be used in the same way as groats. So far we have not mentioned either dandelions or onions; opinions are divided as to the giving of these. On the whole, the safer plan is to use tender grass or lettuce in preference to the stronger green foods. Turkeys will help themselves to dandelions, and when they are old enough to wander afield for them, let them have them if they wish. Dandelions produce a griping and frequent diarrhoea in some turkeys, and more so at some seasons of the year than others, therefore both these and onions should be used with caution. Young nettles can be cooked and chopped and added to the soft food in advantage. Give a little cooked meat at least once a day, especially if milk is scarce; in such a case the allowance of meat should be increased. Drinking water should be supplied in vessels that the turkeys can drink without getting wet through, or standing in them. It should be supplied from start to finish, whatever the object of the turkey.

FROM THREE WEEKS OLD.

Feed five times a day. Changes can be made when the chicks are three weeks old, for they will have grown, and can be given coarser foods, and less frequent feeding, but the longer the dainties are kept on with the better; at any rate do not stop them off suddenly, let them down easily. Soft food should still be the chief thing, and the daily dietary should be somewhat as follows,

(1) Breakfast, scalded biscuit meal, dried off with Sussex ground oats or fine middlings.

(2) Very stiff porridge, made when possible with skim milk.

(3) Any cooked green vegetables and meat mixed with ground oats or oatmeal and double the quantity of fine middlings.

(4) Rice and oatmeal, cooked until bursting, and crumbled with fine oatmeal, middlings or ground oats. Cook in skim milk or meat liquor when possible, and add a little meat to the mash. Wheat may be cooked in the same way and dried with oatmeal.

(5) Sound grain, such as wheat, groats, or buckwheat, or a larger grade "Dry Feed" mixture. As the birds grow, plump oats may be gradually introduced to the supper bill of fare. Now and then steamed wheat or broken maize makes a nice change. Give some meat or fresh cut bone daily, especially if milk is not used.

VARIA.

We do not mean that these remarks should be slavishly followed, as many changes can be made, but only that some of the finest turkeys reared have been fed on similar lines, and for stock birds the diets are very suitable. As changes, "curds" with the water squeezed out, and bread and milk treated in the same way, by placing in a piece of muslin and squeezing the water out, may be given. For turkeys that are to be marketed, coarser and cheaper foods can be given. When cheap the despised potato can be used. Two parts of cooked potatoes, and one part of biscuit meal, and ½ part of pea meal, and one part of fine middlings will be found both useful and economical. It could be improved by a little rough meat being cooked with the potatoes and added to the food. In a like manner carrots or other vegetables can be used. Rice or wheat could be cooked instead of the potatoes.

FROM SIX WEEKS OLD.

Feed four times a day. Breakfast. Any of the soft foods advised, always remembering that a supply of animal matter is an essential addition to them. Many things are available for this,such as cooked pluck, or any others butchers' offal; failing these, well-boiled dry meat or a good brand of fish meal could be used. There is also fresh cut bone, which is better given as a separate dish; used with discretion, this has been found a very excellent promoter of size. The second feed could be some dry grain, wheat or buckwheat mixed with it, with advantage. The third should be entirely soft food. The fourth meal, sound grain, wheat oats, buckwheat, and cracked maize occasionally. Green food it is anticipated they will have found for themselves.

AT FOUR MONTHS OLD.

Future stock birds should be allowed all the range possible, and in many cases two meals per day will be quite sufficient, and in such cases wheat and oats should be the staple grain. On a less range it may yet be advisable to give soft food, at any rate every other morning, and wheat or oats at night. But during the day they should forage for all else they require.

Market birds should still have soft food every morning, but might with advantage be allowed to forage during the day, and be given a good supper of wheat or stout oats on their return at night. Any of the advised soft foods could be used. When attempting to rear turkeys in a rather limited quarter, such as a two acre paddock, a dinner-time feed may be necessary.

All turkeys might be driven to the stubbles after the harvest, and so pick up their living for a few weeks, returning in time for some special feeding in readiness for the Christmas market. Stock birds must not be allowed to get fat, and in years when the grain knocked out of the ears of corn is considerable, the future stock birds would be better away from the stubbles.

FATTENING TURKEYS.

Give three meals a day. For breakfast, ground oats and finely ground barley meal, mixed with skim milk, or three parts of cooked mashed potatoes, one part of ground oats, and one of fine barley meal. Or two parts of middlings and one of barley meal, and one of maize meal, along with three parts of potatoes. In both cases it is better to cook the potatoes with rough fat meat, or to use some skim milk in the mixing of them and the meals. The noon feed can be a repetition of the above, or boiled wheat, especially if boiled in milk or meat liquor. They are very partial to very stiff oatmeal porridge. The evening meal may be still oats or some wheat.

When turkeys are confined to a barn for fattening, and only allowed out for an hour at meal times, two meals a day are sufficient, ground oats and skim milk being the staple, and to this add a little melted fat during the last fortnight. Properly fattened in this way, the flesh is beautifully white, and such birds command the best prices. In some districts it would not pay to fatten in this way, and then the coarser foods advised could be used.

REMARKS.

Animal food in some shape or form is practically essential. The use of skim milk largely compensates for any shortness of animal food, and may be used in lieu of animal food.

The mother of turkey chicks should be kept cooped until the chicks are a month to six weeks old. It is often necessary to drive chickens to the coop when a shower of rain is evident. Until chicks are a month old, heavy rains are very destructive to them. Turkey chicks generally run to shelter themselves after they are about six weeks old. Extra care at this age is required, as it is a critical time in their lives known as "shooting the red," a term applied to the change of colours about their heads. Turkey chicks can be reared much the same as other chicks, but more animal and green food is required. Special care should be taken to keep them free from insects. They require a regular allowance of grit, which should always be placed in the vicinity of the coop. Turkey chicks cannot stand overcrowding in coops at any age, and they require dry, well ventilated sleeping apartments.

CHAPTER XXVI.

DISEASES.

THEIR SYMPTOMS AND CURE.

ANAEMIA. Pale comb and face, dull eyes. Cure: plenty of fresh air, sunlight and green food, also a teaspoonful tincture of iron to three pints water.

APOPLEXY. Symptoms. Lying with head on floor or turned back. Put the bird in a dark pen and give half teaspoonful Epsom salts in wineglass of warm water every other day.

BRONCHITIS. Symptoms. Difficult breathing or wheezing. Keep in dry pen and give 10 drops ipecacuanha wine in teaspoonful glycerine four times daily.

BUMBLE FOOT. Symptoms. Swelling under foot or toes. Keep bird on a bed of soft hay and poultice the swelling, then lance and take out the matter. Dress with boracic ointment and bind up. A pinch of sulphur daily in soft food.

CANKER. Yellow growth in mouth. Treat as for diphtheria.

CATARRH. Watery fluid from nostrils. Give ten to fifteen drops ammoniated quinine thrice daily to each bird. Roup cure is also effective.

CHOLERA. Symptoms. Moping with wings partly outstretched, ruffled plumage. Greenish watery diarrhoea, frothy towards the end. Isolate ailing birds in a dry shed and give chlorodyne, three to six drops every four hours. All drinking water should be boiled and slightly coloured with permanganate of potash. The runs will need disinfection after, and houses should be limewashed with hot lime.

CONSUMPTION. Symptoms. The comb may be brilliant red, but the bird wasted to a skeleton. Not advisable to try to cure.

CRAMP IN CHICKENS. Toes closed together, walking on knuckles. Bathe the legs in hot soda water and paint shanks and under the feet with iodine. Add a teaspoonful of salicylate soda to each pint warm drinking water, and give when cool. Give plenty of green food, not much meat, and allow the chicks to hobble on the earth. Cod liver oil, at rate of 5 drops per chick for every week of its age, may be given twice daily in soft food.

CROP BINDING. Symptoms. Hard mass in the crop which does not move. Hold the bird under the left arm with head grasped in left hand and neck straight. Pour in ½ pint of water coloured bright pink with permaganate potash, and knead the crop with finger-tips of right hand. As the crop softens turn the head down, open the beak and with the right hand squeeze the crop to evacuate the contents.

Repeat the process until the crop is empty, it is better not to try to get too much out at once. Add 15 drops tincture of iron to half a pint of drinking water, and keep the bird on a shaded floor and feed on bread and milk. Tough grass can only be moved by an operation. Lay the bird on a bench with attendant holding it, the head to operator's left hand, wet the feathers, and extract some where the incision is to be made, choosing a place where there are no large veins. Bathe the part with carbolic acid, one in twenty, and through the outer skin in a line with the neck (not across) then make a 1¼ inch orifice in the crop proper, and carefully remove the obstruction with a spoon handle. When empty pour in and out again boracic acid, and close up both slits with a few separate stitches of catgut or horsehair, and smear the part with carbolised vaseline.

DIPHTHERIA. Symptoms. Yellow growth in mouth or throat. Remove yellow matter without making parts bleed, painting the spot with tincture perchloride of iron twice daily, or one spot of creasote once daily. All birds to be isolated and each have half teaspoonful sulphur daily. The attendant on such birds should keep away from other fowls until he has changed his clothes. The remedies advised for roup should also be given.

DYSENTERY,—i.e. passing blood, is frequently endemic. Give affected chickens powdered charcoal in enough soft food, a teaspoonful for each twelve under a month old and pro rata. Leave off grain for the time except chopped groats. Give a little olive oil in the soft food, and barley water to drink.

Egg Binding. Frequenting the nest with mopish appearance. Immerse hind-quarters of bird in hot water for some minutes. Pass an oiled finger in the vent to loosen the rim of flesh which keeps the egg, keeping the egg in place by gentle pressure on the outside of the body. If the egg is not passed in half an hour put the bird in a basket by a fire and try again in half an hour's time. Five drops of ergot may be given, and five the hour following, allowing four hours' rest before trying again to remove the egg. Warm oil may be injected into the vent. After safe removal feed sparingly and add epsom salts to the drinking water.

Egg Eating. The best cure is a special nest which allows the egg to fall through a hole in the bottom out of the bird's reach, another plan is to turn the nest box to the wall just allowing room for the bird to get in and darken it by means of a board etc.

Soft Shelled Eggs. First look to the grit supply, but a likely cause is overfeeding, and such birds should be taken off the perch at night and kept up until after other birds have had breakfast, feeding the affected bird on hard grain and plenty of green food and half a teaspoonful Epsom salts every other day.

Enteritis. Symptoms. Ruffled feathers, great thirst, yellowish diarrhoea. Isolate ill birds, and call in an expert. The remedies advised for cholera are suitable, and a germicide added to the drinking water. Cleanse the runs with powdered quicklime, leave until rain has fallen, then dig in. But the only safe way is to remove to fresh quarters.

Feather Plucking. Small gags may be obtained which allow the birds to eat but not grasp a feather. Provide plenty of exercise and green food, and add a teaspoonful sulphate soda and half teaspoonful carb. potash to each pint of drinking water. Smear any bare patches with carbolised vaseline permeating the base of the feathers, and see that the fowls are free from insects. A small amount of table salt may be added to the soft food.

Fracture of Shank. Bathe the part in decoction of quassia chips, cover two suitable splints with rag stitched round. Soak a long bandage in starch and bind the splints on either side the shank, moisten bandage with eucalyptus oil. Keep the bird in a basket with 12 inches hay under, for a fortnight, not touching the bandage for ten days.

FROST BITE. Comb turns dark or skin peels away. Apply camphorated oil and keep bird out of wind or frost.

GAPES. Symptoms. Opening of mouth and coughing constantly. Put birds in a lined basket and fill it with tobacco fumes or shake in gape powder to make the birds cough up the worms, taking care to burn the latter. Keep the coops dry and apply gape powder freely all about the place.

JOINT DISEASE. Softening and decaying bones. Incurable and origin not known. Kill and cremate such birds.

KIDNEY DISEASE. Usually in complication with liver disease etc. Symptoms. Thirst emaciation, ruffled plumage, diarrhoea. Give boiled pearl barley to eat and the barley water to drink. Feed on bread and milk and green food but no meat. Add a drachm of iodide potassium to a pint of drinking water.

LIVER DISEASE. Symptoms. Dull purple comb, lack of appetite. Give a teaspoonful epsom salts dissolved in hot water, afterwards ten drops tincture rhubarb per bird each morning and quarter teaspoonful magnesia and charcoal to soft food. As soon as possible get a specialist's liver remedy. Feed on oatmeal porridge, lean meat, groats, vegetables, except cabbage, no grain. Allow exercise in shady run. Chronic liver disease shows in yellow face and sharp breastbone, all sufferers should be killed and the land disinfected.

LIME POISONING. Various symptoms. Birds crouch with legs close to body. Give an oz. of olive oil followed by large doses of linseed tea.

LEG WEAKNESS. Symptoms. Crouching on the hocks. Half teaspoonful of Fellowe's Syrup in a little water thrice daily should be given and plenty of meat and good food.

PIP. A dry horny tongue caused by stomach trouble. Give half teaspoonful of flowers sulphur each morning on soft food. A teaspoonful epsom salts and one of carbonate of soda to each pint of water. Dress the tongue with glycerine and borax.

PERITONITIS. Associated with inflammation of the oviduct.

PNEUMONIA. Difficult breathing, cough, and thirst. Keep the bird in a warm place and give five drops ipecacuanha wine every two hours in a little water. Warm bread and milk to drink. In young chickens it is hopeless, as these remedies cannot be employed.

QUILL BINDING. Retention of web of feather in sheath. Soak quill in hot water, split it with thumb nail and slide sheath off feather end. Give cod liver oil and extra fat.

ROUP. Symptoms. Bad smelling discharge from nostrils, swollen face. Isolate ailing birds, bathe swellings with hot vinegar and water and administer a good roup powder. For a flock give pulverised sulphate of copper, half teaspoonful to half a gallon of soft drinking water in earthenware vessels, or creasote pills (one minim) should be given twice or thrice daily.

SCALY LEG. Symptoms. Raised scales or incrustations on legs. Isolate ailing cases, and paint the legs with paraffin up to the hocks, after a day or two wash with hot water and soft soap. Try to remove incrustations without making shanks bleed, and apply, in mild cases, carbolised vaseline, in severe cases, vaseline and creosote. Two weeks treatment may be needed.

SMALLPOX. Small dark scabs on head and under wings. Dress sores with carbolised oil and rigidly isolate. Give an adult fowl a teaspoonful of sulphur in soft food daily, and add two tablespoonfuls sulphate soda, a teaspoonful sulphate magnesia, quarter teaspoonful tincture iron, and eight drops of creosote to each quart of water.

TUBERCULOSIS. Such ailing birds are unfit for table and are better killed and burned.

VENT GLEET. Symptoms. Redness and incrustation, bad smelling. Isolate ailing birds and give teaspoonful epsom salts every other morning. Soak off incrustation with hot water and carbolic soap and dress with zinc ointment. Give sulphur in the soft food. The attendant should be particular to cleanse his hands after handling the birds.

VERTIGO. Running in a circle. Treat as for apoplexy.

DROPSY OF WATTLES. Usually a phase of roup. Hard swollen wattles. Bathe in hot vinegar for some days, and if the swelling does not diminish, lance wattle at lowest part and get out any fluid. Syringe the wound with weak solution of perchloride of iron. Give half a teaspoonful of sulphur in soft food.

WHITE COMB. Symptoms. White scales on comb, which turn into cup-like crusts, spreading over body and causing loss of feathers. Bathe comb and affected parts with hot vinegar and water and apply carbolised vaseline, ten per cent. It needs persistent attention, and the attendant must not touch his face while doctoring such birds. In severe cases expert advice should be called in.

WORMS. Symptoms. Loss of condition, ravenous appetite etc. The birds should go supperless to bed and next morning have ten drops of turpentine in a little olive oil. A couple of hours after give a warm mash of scalded bran containing a teaspoonful epsom salts and quarter teaspoonful table salt. The rest of the day feed as usual. Repeat treatment every other day until cured, allowing half dose to half grown chicks. Drinking water should be boiled and all used litter burnt. If possible move birds to fresh land.

WRY TAIL. Deformity caused by contraction of tendons. Can be cured by surgical operation but as it comes under the head of faking it is not here given.

NOTE.—The doses are for birds 4 to 5 lbs. weight; other birds should have larger or smaller doses pro rata.

CHAPTER XXVII.

POULTRY PARASITES.

HOW TO DISTINGUISH AND ERADICATE THEM.

On a well regulated farm there should be no parasites, but it is essential for the poultry keeper to know them so that he may be on his guard when purchasing fresh stock, as parasites spread with rapidity. Some parasites are comparitively harmless, others are destructive.

THE RED MITE. Small dark red, scarcely larger than a pin point, rarely found on birds during the day, but come forth at night from crevices, where they may be found in clusters. Outside the holes where they hide may be seen silvery grey powder, the skin young larvae have sloughed. These mites suck the blood of their victims and a great number can cause the death of a well grown fowl. Paleness of face or comb is sometimes an indication of their presence. House and perches should be kept scrupulously clean by scrubbing with soft soap and water, and painting with paraffin once a fortnight. Limewash alone will not kill or harm the insects.

THE HEN FLEA. The hen flea begins in the maggot stage, and is found entirely in the nests and rarely on the birds. The presence of such is a sign that the sanitary condition of the house is not attended to, and one may see pupa and maggots and unhatched nits lying amongst sand and down in dirty nests. The fully grown flea may be a quarter of an inch in length. Dalmatian insect powder is the best remedy, and the nests should be kept clean and scrubbed with hot water and soft soap periodically.

MENOPON PALLIDUM. Called the red louse: an orange coloured parasite which eats the feathers, also causing much irritation. It is this species which gets on the hands when plucking a fowl affected with them. These lice rarely live 24 hours away from a fowl, and do not attack the ducks, chickens, etc.

CONICOTES HOLOGASTER. Sometimes mistaken for Menopon, but larger in abdomen, and having brown bands.

LIBEURUS VARIABILIS. A narrow species found occasionally among the barbs of wing feathers. It is not long and pale in colour.

FOWL TICK. (*Goniodes Eynsfordii*). This confines its attention to the head of chickens. It should be sought for at the base of the fluff on the head, its head buried in the flesh, the body turning over in the air with the head down. White precipitate is safe as a remedy if used sparingly, or carbolised vaseline or carbolised oil, which must not be allowed to go too near the eyelids.

DEPLUMING PARASITES (SCABIES LAEVIS). When fowls pluck feathers out of each other, the presence of this mite may be suspected. These parasites cause a great loss of feathers, and loss of rest. Poisonous remedies such as mercurial ointment should be avoided. An oz. of vaseline containing ten drops creosote warmed and mixed is a safe remedy.

Where no other remedy is mentioned, insect powder should be used. All remedies should be applied weekly for three weeks, in order to destroy any nits or eggs that may hatch during that time.

CHAPTER XXVIII.

GLOSSARY OF POULTRY FANCIERS' TERMS.

A.O.C.—Any other colour

A.O.V.—Any other variety

BARRED, BARRING.—The stripes of dark and light across a feather.

BEARD FEATHERS.—A bunch beneath the throat in certain breeds, such as Polish or Houdans.

BRASSY.—Yellow or yellowish feathers on the shoulders or hackle of cockerels.

BREAST.—The front of the body from the point of the breast bone up to the throat, in a live fowl ; in a dead (table) fowl the breast is each side the breast bone.

BREED.—A certain kind of fowl having particular characteristics. The term breed includes the varieties of colour of that breed.

BRICKY.—A dull, harsh, red colour usually found on Buff cockerels and dark-topped Black-Red Game cocks.

BROOD.—The number of chicks under one hen or brooder.

BROODY.—Having a tendancy to sit or incubate, i.e. to hatch.

BROWS.—Overhanging eyebrows of a Malay fowl.

CAPE.—The feathers between the shoulders under the base of the back or hackles.

CARRIAGE.—The style or bearing of a bird.

CARBUNCLES.—Protuberances of a fleshy kind, such as on the neck of a turkey cock.

CHAIN-ARMOUR.—Refers to lacing on the claret breast of Rouen drake; a fault.

CHICK.—A fowl newly-hatched or not more than a few weeks old.

CHICKEN.—This is a word indefinitely applied up to the age of twelve months.

CLARET.—The breast colour of a Rouen drake.

CLEAN-LEGGED.—Having no feathers on the legs (opposite term to feather legged).

COB.—The male swan.

COBBY.—Stoutly built and well-rounded in form.

COCKEREL.—In show parlance, a bird hatched in the year it is exhibited. In Utility language a young male until first adult moult.

COLLAR.—A white ring round the neck of a Rouen duck.

COMB.—The fleshy ornament on the head of a fowl.

COMB-OVER.—Having the comb dropping over to one side, as in Leghorns, Minorcas, etc, or having Rosecombed birds.

CONDITION.—The state of a bird's health or plumage, especially the latter.

COOP.—A small wooden structure for accommodating hen and chickens, or for keeping fowls to fatten, or for the suppression of broodiness.

CRADLE-COMBED.—A term applied to Wyandotte's comb.

CRAMMER.—A machine for fattening poultry.

CREST.—A tuft of feathers on the head of a fowl, such as a Polish or Houdan.

CROP.—A receptable for food at the bottom of the neck in front of the breast bone.

CURVES.—The sloped back and tail of a Malay, and their relative angles.

CUSHION.—The bulk of feathers over the tail-end of a hen's back, partly covering the tail.

DEAF EARS.—Ear lobes.

DIAMOND.—A term applied to the wing-bay or wind-end.

DISHED.—A lobe which is hollow in the centre and elevated at the edges.

DISHED-BILL. The down-curves in the upper bills of some ducks. Pekins are dished. Aylesbury are in a straight line from bill to top of skull.

DOUBLE-LACED.—An inner ring or marking on feathers of Indian Game; also an outer edging of ground-colour beyond the black lacing of Wyandottes.

DUBBING.—Clipping off the comb and wattles etc., to leave the head smooth and clean.

DUCK-FOOT.—The back toe being carried closely to the other toes instead of being well spread out behind.

EAR LOBES.—The folds of skin that hang below the ears. Red or white according to variety.

EARLY HATCHED.—Hatched before April.

FACE.—The skin round the eye.

FEATHER-LEGGED.—Having feathers at the sides of the shanks and feet; as in Brahmas.

FEATHER-TRACTS. The areas on a fowl's body on which the feathers grow. (The feathers do not grow evenly all over as might be supposed).

FINELY-DRAWN.—Applied to tall birds with fine bones, spare body, tight feathers and narrow sickles, light and sprightly.

FLAT-SHINS.—Flat fronts on a Game fowl's flanks. This is a fault, as they should be rounded.

FLIGHTS.—The primary feathers of the wing, used in flying, but folded out of sight when not being used.

FLUFF.—The downy part of the feathers, also the feathers on belly to the rear of the thighs.

FURNISHED.—A cock when he has full tail, hackles and comb, etc., is considered furnished.

GAY.—The high or "squirrel" tail, also the heavy white splashes on Anconas, Houdans and Spangled Game.

GILLS.—The region of the throat and wattles.

GREEN BONE.—Bone fresh cut from the carcase at the butchers; the term implies freshness and has nothing to do with colour.

GREY.—A mixture of black and white on the feathers, chiefly wing and tail, of what should be self-coloured varieties.

HACKLES.—The narrow lance-shaped feathers on the necks of fowls and the saddles of cocks.

HANGERS.—The shorter sickle-like feathers at the base of a cock's tail.

HARD-FEATHERED.—Feathers having a hard glued-down appearance, or a variety of fowls carrying very scanty fluff.

HEAVY BREEDS.—The sitting varieties.

HEN-FEATHERS.—Like a hen in plumage or in having no sickle or hackle feathers.

HIGH IN BACK.—A deformity, tantamount to hump-backed.

HOCK.—The joint between the thigh and the shank.

HORSE-SHOED.—The lacing of Wyandottes, which instead of encircling the feathers, falls short, giving a horse-shoe effect to feather tip.

IRREGULAR.—Irregularity in outline in Wyandotte lacing.

KEEL.—The loose flesh and feathers dependant from breasts of ducks and poultry.

KNOCK-KNEED.—Having the hocks near together ; they ought to be well apart.

LACING.—The edging round a feather, generally a darker hue than the ground colour, as in Wyandottes.

LATE HATCHED.—Hatched out after May.

LEG-FEATHERS.—Feathers attached to the outer sides of the shanks.

LIGHT BREEDS.—Varieties which do not sit.

LIMBY.—The length of thigh in a Malay.

MANDIBLES.—The upper and lower beak.

MAZARINE.—A term applied to deep blue or purplish markings across a black feather.

MARBLED.—Applied to the ticked and laced feathers on Pile Game cock's breast.

MOSSY.—Confused, indistinct markings.

MOULT.—The autumnal change and casting of feathers.

MUFFINGS.—Side whiskers and beard on the heads of some French breeds.

NON-SITTER.—Varieties which do not Incubate their eggs.

PEA-COMB.—A triple comb, like three small combs side by side; or in one, the middle one being the highest.

PED.—A specially made light crate for packing dead poultry for market.

PEN.—The female swan.

PEN.—An enclosure of a team of birds.

PENCILLING.—Small stripes across a feather, either straight or crescent-shaped, also refers to grey marking of a Rouen drake, and black spots on the plumage of Black-Red Game hen.

PENCILLY.—Having thin pencil-like spikes on the comb.

PEPPERED.—Having small black spots on the feathers inside the lacing of a feather, or on the ground colour of a plain-colour variety; as black dots on buff flight or tail of buff breeds.

PETIT POUSSIN.—French term for a milk chicken, sold at age of six to eight weeks. Weight six to eight ounces.

POULT.—A young Turkey.

POULTRY.—Fowls, ducks, geese, turkeys, guinea fowls and Bantams .

PRIMARIES.—The first ten feathers in a fowl's wing.

PURPLY.—With purple bars across greenish-black feathers.

PULLET.—In show terms, a bird hatched in the year exhibited; in utility terms, a female till the first moult; after that it is called a hen.

QUILLBOUND.—Retention of the web of a feather in its sheath (which should crack and fall off).

REACHY.—Term applied to height in varieties where tallness is a virtue; length of neck, thigh and shank.

RIBBON.—The marking across a ducks wing.

ROACH-BACK.—Having a hump on the back like a roach.

Rose-Comb.—A good broad comb, nearly level across the top and covered with small points.

Rooster.—The popular name for a cock in America.

Saddle.—Part of the back reaching to the tail of a cock, corresponding to the cushion in a hen.

Sappy.—A cream tinge on what should be white plumage.

Scales.—The horny sheaths on the legs.

Scratching-shed.—A high open-fronted shed in which litter is placed, then corn scattered, so that the birds must scratch for it and thus get exercise.

Secondaries.—The quill feathers of the wing, or the second lot of stiff flight-feathers. These, when closed, form the triangular patch of colour in a Game or other cock.

Self-colour.—The uniform tint over the bird or feathers.

Serrations.—Spikes on the comb.

Shaft.—The quill or stem of a feather.

Shafty.—The term applied to birds that show the quill of the feather, lighter than the ground colour.

Shank.—The scaly part of the leg.

Sheen.—Green or any gloss on plumage.

Sickles.—The top pair of curved feathers on a cocks tail; sometimes one of two pairs below are so termed.

Side Sprigs.—Extra spikes at the side of the comb.

Sitters.—Varieties that incubate their eggs.

Sorting Board. A board with various sized holes for grading eggs.

Spangling.—The effect shown by a spot or splash of colour different from ground-colour. In laced breed also applies to the broad lacing at the top of feather, which is a fault.

Spikes.—Comb serrations.

Split Crest.—A crest which opens and falls to one side or the other instead of being globular.

Spur.—Weapon of defence on the inside of the bird's shank.

Squirrel-tailed.—With the tail feathers almost reaching the neck.

Stag.—The term used by Game breeders for a young cock.

Standard.—The list of requirements in a perfect bird of various varieties.

Station.—A term used for symmetry, but chiefly in connection with height or reach.

Steppings.—The tops of the secondary feathers in a bird's wing, which are shorter and shorter as they near the back, giving the idea of steps.

Strain.—A special quality in a fowl which is perpetuated in its progeny.

Striping.—Marking in the neck and saddle hackle.

Surface Colour.—The part of the feathers exposed to sight.

Symmetry.—Balance and perfection of proportion.

Tail-coverts.—The curved soft glossy feathers at the sides of the lower part of the tail. They are generally the same colour as the sickles.

Tail Feathers.—The stiff and straight feathers of the tail only ; sometimes the two top ones are slightly curved, but they are generally straight, and in a cockerel are contained inside the sickles and tail coverts.

Thighs.—The joint above the shanks ; the first joint all clothed over with feathers; The drumstick in dressed fowls.

Thumb-mark.—A hollow and ridge, in front of the comb on a large combed breed.

Tom.—A gobbler. i.e. a male turkey. In some counties " a Tom " is a cockerel or male bird in all poultry. except those with webbed feet.

Top-knot.—The bunch of feathers on the top of the head, the crest.

Tri-coloured.—The term given to cockerels, which ought to be one shade, when their hackles, saddles, and tails are darker than each other and the wing bow darker still.

TRIO.—A cock and two hens, or a cockerel and two pullets, i.e. a male and two females.

UNDER COLOUR.—The fluff or part of the feathers only seen when the plumage is opened. It is great importance in breeding, and frequently differs from the surface colour.

VARIETY.—The division of a breed by colour or marking. A breed contains all the varieties of that breed.

VULTURE-HOCK.—Stiff, outstanding quill feathers at the hock joint.

WATTLES.—The red, hanging structures at each side of the bottom of the beak. Developed most in the male birds.

WEB.—Meaning a flat, thin structure. The web of the foot is the flat skin between the toes. The web of the feather is the flat or plume part. The web of the wing is the skin seen when it is extended.

WING BAR.—Any dark line of colour across the middle of the wing, caused by the colour or marking of the feathers known as the lower part coverts.

WING BAY.—The three cornered part of the folded wing below the bar.

WING BOW.—The shoulder part of the wing above the bar.

WING BUTTS. The ends or corners of the wings. The upper ends being more properly the shoulder butts, the lower are termed the lower butts.

WING COVERTS.—The broad feathers covering the roots of the secondary quills.

CHAPTER XXIX.

THE INTENSIVE SYSTEM.

A work like this would be incomplete without reference to the intensive method of poultry culture, which is now coming into prominence in this country. It has not had a sufficiently long trial for anyone to express a decided opinion on it, and one can only give some of the methods that have been adopted and which seem to offer reasonable hopes of success. Briefly there are two systems, one is the segrate system and the other the aggregate; in the first system six or seven birds are kept in a coop 6 by 3 or 7 by 3, according to the design, and in the aggregate or mammoth method 90 to 100 or even 1,500 pullets are kept in one mammoth house.

The former system has its advantages for very small suburban poultry keepers, because these coops are much tidier than the usual baggy wire netting and sloppy runs one has seen in the past. The coop is usually divided in the middle and has the nest or small roosting platform in one corner, whilst at the other corner the perch is fitted on top of the dropping board and serves practically as a handle for it, the whole resting on fillets of wood screwed to the side of the apartment. This board is moved each morning and scraped and freshly sanded and only returned to its place at night, leaving the whole of the floor space for scratching purposes.

More frequent feeding than in the ordinary system is necessary, as it is imperative that the birds should be kept busily active in their confined quarters, therefore the question of litter is very important. Cut straw or chaff are the best forms of litter, there should be a layer of sand on the board, or a layer of peat moss, always supposing that the coops stand on a perfectly dry land, otherwise they must be provided with an asphalt or wooden floor. The only access to these coops is in raising the lid or roof, which is made to prop open at various heights during the summer months, and to prevent the birds getting out through the roof a wire netting frame slides over half of it, and another frame covered with white calico is put over the nest half of the apartment. As the mode of feeding in both this and the mammoth house system is practically identical, we give them at the close of the chapter.

THE MAMMOTH HOUSE.

The mammoth house system seems to offer many possibilities. Some of these huge structures are provided with up and down stairs, the majority however have a single floor and almost the entire front of the huge shed is covered with wire netting, which is in turn covered by canvas shutters which can be set at any angle, the remaining portion of the front being glass windows, the bottom half to the height of two or three feet, is generally solid boards.

The dropping board in this case is arranged right along the back of the whole apartment, and the perches run lengthways over it; the nests are situated underneath, three or four in a set, the backs to the shed and a twelve inch gap, so that the birds can walk up and enter the nests through a dark passage at the back of the house. A series of these nests run the whole length of the shed, and the eggs are collected through hinged flaps which fasten with a button. In other sheds the nests are built up in tiers on the solid part of the front of the shed, a narrow gangway running along the front of them. The main object is to keep the nests well off the floor or well in the dark, to prevent egg eating which is somewhat prevalent with birds kept on the intensive system. Here again the dry litter is the greatest obstacle the poultry farmer has to surmount, or perhaps it would be more correct to say the difficulty in keeping the litter dry is the obstacle. Cement floors rarely answer in a shed of this kind, asphalt is on trial, whilst the boarded floor is a workable problem, although it does not answer for chicken rearing.

A house 16 by 20 feet is allowed for the accommodation of 90 to 100 birds and in the houses 3½ feet to 4 feet of floor space per bird is the usual rate. Although it may not be possible to obtain record egg averages from such large flocks of birds, if one considers the number of eggs obtained per square yard of the occupation of the land, the gain is simply enormous over the old system. Egg averages of 140 and upwards have been obtained, and are quite satisfactory.

BREEDS.

The ordinary farmers' cross bred fowls so far have not succeeded in this method, probably the variety will have to be evolved that will give the best results. So far the

White Leghorns, the White Wyandottes and a good laying strain of White Orpingtons and some Rhode Island Reds have given the best results under these conditions, and one of the breeds which is coming largely into use now is the Campine.

Then comes the question of breeding from birds kept in these houses; it is quite against the British theory, but it has been done with a great measure of success across the water, and it may be possible, just as some varieties of weeds may be taken and cultivated until they become a beautiful flower, yet if left uncultured for a year or two would relapse back into their original state if they survived the change at all. It is not at all impossible that a race of poultry may be evolved to stand the intensive system admirably, but up to the present the epitome of the opinions on the subject seem to be focussed to the one point, and that is, that chickens for these houses should be bred from birds kept in some measure of confinement, if not intensive, and they may be reared intensively for six or eight weeks and then be sent out in colony coops on a grass farm until five or six months old, as it is contended that only in this way can they get the right amount of constitution to enable them to stand one or two seasons of such close confinement.

One word might be added about the use of grit.

It is necessary to have troughs of both oyster shell and flint grit always full as it is not possible for the birds to get a sufficient supply otherwise.

Intensive Feeding Methods, No 1.

9 a.m., grain, ½ oz. per bird.
11 a.m., Mash, 1½ oz. per bird.
1 p.m., sprouted Oats, up to 1 oz. per bird.
3 p.m., winter, grain, 2 ozs. per bird.
Night, after all are gone to roost, grain ½ oz. per bird.

Mash consists of
Bran 1 part.
Biscuit Meal, 1 part.
Short Clover Hay, or alfalfa 1 part.
Middlings, 3 parts.
(No Bran Hopper with this ration.)

Grain consists of Wheat, Oats and crushed Maize.

The latter used more generally during the winter; small wheat breakfast; equal parts Wheat and Oats for tea in summer; equal parts Wheat and Maize for winter.

INTENSIVE FEEDING METHODS, NO. 2.

TIME TABLE.

Between 6 and 8 a.m., soft mash, 2 ozs. about, when mixed with water.

Between 9 and 10 a.m., grain feed, ½ oz. per bird.

12 noon, Green food, sprouted Oats. No 2 grain Feed, ½ oz. per bird.

3 to 5 p.m., according to, 1½ oz. grain per bird, may be fed in troughs for the purpose of expeditiousness, in order that birds go to roost with a full crop. No stinting at this meal.

COMPONETS OF MASH.

Clover Hay, 1½ parts.
Bran, 2 parts.
Ground Oats, 1¾ parts.
Middlings or Sharps, 1¾ parts.
Dried or granulated meat, or Fish Meal, 1 part.
Maize Meal, 1 part.

GRAIN.

Wheat, Oats and split maize.

The latter used more extensively during the winter.

Small wheat for breakfast.

Equal parts Wheat and Oats for tea in summer.

Equal parts Wheat and Split Maize for tea in winter.

Bran Hopper, (self-feeding) is filled each noon if empty. Birds partake of the dry Bran, ad. lib.

INTENSIVE FEEDING METHODS, NO. 3.

THE DRY MASH SYSTEM.

In this case the " Mash " is put in Hoppers dry, without any addition of milk or water.

TIME TABLE.

9 a.m., Green food.

10 a.m., grain, 2 to close of day. Dry Mash in Hoppers, (ad. lib).

DRY MASH.	
Bran ..	5 parts
Granulated Meat or Fish Meal	2 ,,
Pea Meal ..	1 ,,
Ground Oats	2 ,,
Middlings ..	2 ,,

GRAIN.	
Kibbled Wheat	3 parts
Kibbled Maize	1 ,,
Canary Seed	1 ,,
Millet ..	1 ,,
Split Peas	1 ,,

Skim milk may be given to drink during the morning, water rest of the day.

If fresh cut bone is used, ½ to ¾ oz. per diem may be given, in which case the granulated meat in the mash should be replaced with biscuit meal.

SPROUTED OATS.

Sprouted Oats figure largely in the dieting of Intensive kept birds, given under the breeding of green food, up to one ounce per bird per day is allowed.

Sprouted Oats roots and all are given the birds after being chopped into ½ inch lengths.

Oats may be sprouted in greenhouses, cold frames and in the specially constructed heated cent sprouters, which are cabinets with a series of drawers.

Dry Oats are spread over the surface to the depth of one inch, carefully water daily for 10 days or longer as required. The more evenly the water is spread, the more level the crop. When the shoots are grown 3 inches, cease watering and allow them to grow another inch or inch and half to take up all superfluous moisture. For the last few days they may be exposed to the light to green the otherwise pale tops. Up to this time warmth and darkness are beneficial. One pound of dry Oats makes 4 lbs. when sprouted.

WHEN IN DOUBT

On all matters connected with Poultry Culture post your query to "THE POULTRY WORLD," 154, Fleet Street, London, E.C. Free answers through the Paper.

ON EGGS, ETC.

The egg occupies too important a place in commerce to need justification in the way of figures shewing exports or returns, although the uninitiated public have not the slightest notion of a tithe of the various uses to which the egg is put, in fact to outline all its uses would be quite beyond the province of a work like this. Apart from its use in the dietaries of the country it is greatly used in the manufactures of the world, calico printers use it, saddlers, the chemist is dependent on it for emulsions and hair restorers etc., and in the compilation of a cookery book what could take the place of the egg? The colours of eggs laid by various breeds of hens are given in the chart in front of chapter 12, but they may be roughly classed as brown, white and tinted, that is tints mid-way between white and brown. Duck eggs vary in colour from the duck egg green to pearly white, and turkey eggs are usually cream colour with dark coloured spots. Goose eggs are large and white. The shell of the egg is composed of phosphate and carbonate of lime in conjunction with a little glutenous matter, and in the top of the egg on peeling off the shell is exposed to view the first opaque membrane known as the shell membrane, and on opening this with a needle there will be seen between it and another layer of membrane, the small aperture known as the air cell, which gradually increases in size as the egg increases in age, and as a guide it may be said that the cell in a new aid egg may be covered by a threepenny piece whilst in a three weeks' old egg it will scarcely be covered by a florin. The yolk will be noticed floating in what is termed the white, and if the egg has been carefully broken into a saucer three whites will be visible instead of one watery white, and in a good egg these three whites will be clearly and easily distinguishable, as they represent an egg full of rich quality of albumen, the purest form of albumen possible to obtain. The thick whitish strings adhering to the side of the egg are dense albumen known as the chalazae, the Greek name for hailstone, owing to their likeness to the hailstone, they keep the yolk suspended in the albumen and always keep the small germinal spot uppermost.

This spot will be noticed on the upper side of the yolk. It is kept in this position because it is more likely to receive the heat from the breast of the sitting hen. If an egg is poured from cup to cup in a careful manner it will be seen that this spot always comes to the top if there is room for it to turn properly. The yolk is enclosed in a thin transparent membrane known as the vitelline membrane, and on top of this is a semi-opaque disk which is the blastoderm or germ cell before referred to as a spot, from this point the embryo begins to grow. This is situated over a portion of the yolk known as the white yolk or utricle which descends to the centre of the yolk, and if a hard boiled egg is cut through, three white yolks and three yellow yolks will be discernable and can be pulled off in rotation.

TIME IN WHICH EGGS HATCH.

Fowls	21	days
Ducks	28	,,
Geese	30	,,
Turkeys	28	,,

CHAPTER XXX.

THE SEMI-INTENSIVE METHOD.

A very practical adaption of the Intensive system has been for some 15 years practised on British egg farms. This is the providing of a large house for 200 to 500 birds, which are confined to the house on wet or snowy days, and at other times are allowed the range of a small grass run. Such a house will stand on a two acre paddock and accommodate 400 birds. In other cases 500 birds are kept in a divided house on two acres of land for 15 years. The secret is that the land is never in really full occupation, the birds being let out for a few hours each day and on some days not at all. The general trend is however towards smaller houses and flocks. The feeding of such flocks is that advised on page 38 for semi-confined runs.

ALPHABETICAL INDEX.

PAGE
Albumen 32
Amount of food .. 40
Analyses of food stuffs .. 35 & 42
Appliances .. 25
Artificial heating, pipes 76
Artificial heating, fire-less brooder .. 76
Artificial heating lamp 76
Artificial rearing .. 76
Bantam menu .. 38
Bins 28
Blastoderm .. 152
Bone cutter .. 29
Breeds, description of various .. 53 to 65
Broody, explanation of 65
Brooder houses .. 76
Brooder house, floor of 79
Brooder house bedding 79
Brooder house temperature .. 77
Brooder house .. 25
Broody coop .. 27
Building, effect of low 45
By- products, 10, 94, 95,
Carbo hydrates 33
Cereals 32
Chickens, size of house for 1000, 25
Chicken coop .. 26
Chicken feeding .. 73 & 74
Chickens, number to house .. 78
Chickens and green food .. 74 & 75
Chickens, reviving travelled .. 97
Chickens, weight of 81
Cold brooder .. 29
Clover hay .. 39
Combs, promoting growth of .. 44 & 45
Cooling eggs .. 69
Cramp .. 80
Cramming .. 84 & 85
Cramming machine 29
Cramming shed, size of 18

PAGE
Cross breeding, what it is 91
Crosses for eggs .. 92 & 93
Crosses for table .. 92
Day–old chicks, packing 96
Dearest foods .. 32
Dietary construction 34
Diarrhoea in chicks 80
Diseases .. .. 130 to 135
Dry feed mixture .. 73
Dry mash .. 148
Duplicate run system 18
Dual house .. 19
Ducks, house for .. 108
Duck rearing 109 & 110
Ducks, crossing .. 112
Ducks, weights of .. 112
Ducks, stock .. 115
Ducklings' menu .. 113 to 115
Ducklings' growth .. 116
Egg testing .. 29
Egg boxes .. 31
Eggs, colour of .. 151
Eggs, length of time hatching .. 152
Eggs, colour of turkey's .. 151
Eggs, colour of duck's 151
Eggs, to find age of 151
Eggs, number to put under hen .. 65
Egg testing for fertility .. 71
Eggs for market .. 98
Eggs, packing sittings 99
Embryo 72
Exhibition birds, feeding 45
Exhibition birds, training 45
Exhibition house, size of 17
Exhibition stock, price of 13
Exhibition stock, feeding 45
Exhibition stock, toilet of 45
Fats 33
Fattening coop .. 27
Fattening table chickens 75
Fattening foods .. 83 & 84

PAGE
Feathers, age they grow 44
Feathers, hardness of 44
Feathers, storing of 95 & 98
Feathers, price of .. 95
Fencing, height of .. 22
Fibre 33
Fish meal .. 39, 42
Fluffing pen .. 47
Food, division of .. 32
Food room, size of 17
Food and feeding .. 33 to 41
Food for egg production .. 32
Food, amount of .. 40
Gizzard, what its use is 41
Geese, varieties of .. 117 & 118
Geese, number in team 118
Geese crossing .. 121
Geese, age they lay 119
Geese fattening .. 121
Geese, stubbling .. 120
Glossary .. .. 138 to 145
Goslings, floor for .. 121
Goslings, feeding .. 119 & 120
Grit, object of .. 39
Grit smasher .. 30
Handling a bird .. 48
Hatching chart .. 51
Heating exhibition house .. 17
House, position for 17
Incubator room .. 23
Incubator room, temperature of .. 22
Incubator temperature 23
Incubator, position of 67 & 70
Incubator eggs for 67
Intensive system .. 146
Intensive house, number of birds to 146
Intensive system, breeds for 147
Intensive system, feeding .. 148
Ireland, varieties for 15
Killing 85
Laying house, size of 20 & 26
Leguminous seeds .. 32
Leg weakness .. 80
Line breeding .. 51
Mammoth house .. 147

PAGE
Mating 50
Menus for breeding stock .. 39
Menus for ducks .. 39
Menus .. 35, 36, 37
Moult, to advance .. 105
Moult, to postpone 105
Nest boxes, position of 19
Non sitters .. 58
Nutritive ratio, how to find .. 34
Oats, analysis .. 43
Oats, sprouted .. 150
Packing dead poultry 86
Packing eggs .. 86
Parasites 136
Ped 31
Perches, position of 19
Petits Poussins .. 87
Plan of model poultry farm 16
Poulet au lait .. 37
Plucking room .. 18
Pond, artificial .. 111
Pulse 32
Ratio, to find .. 34
Ratio, to compile .. 35
Rations, specimen .. 37 & 38
Rats and chickens 136
Resting the run .. 19
Salt 41
Scratching shed .. 26
Selling wasters .. 13
Selling class, meaning of 47
Semi-intensive system 153
Sitting box .. 30
Singing 68
Shell, composition of 151
Shaping trough .. 86
Sitters 81
Sitting box, size of 65
Sitting hen feeding 66
Soil and breed .. 14 & 15
Stock, price of .. 12
Storm lamp .. 28
Strain 51

PAGE
Summer rations .. 36
Sprouted oats .. 150
Tarring netting .. 22
Table birds, colour of flesh .. 88
Table birds, average prices .. 89 & 90
Tests for fattened bird .. 87
Troughs 29
Training pens .. 30

PAGE
Trussing knife .. 28
Trussing .. .. 100 & 101
Trap nest .. 28
Vitelline membrane 152
Water vessels .. 29
Water supply .. 41
Washing fowls .. 46 & 48
Weight, increase of 87
Whites of egg, number of 152
Utensils various .. 27 to 31

Standard Coloured Plates of Poultry

"POULTRY WORLD" Plates of the following varieties are now on sale:—

Andalusians, White Rocks and Brown Leghorns
Bantam Cock, Black Rosecomb
Bantam, Spangled Old English Game
Bantams (Various)
Bantams, Black Rosecomb (Cock & Hen)
Blue Andalusians and Anconas
Campine, Silver Cockerel
Ducks, Aylesbury
Faverolles
Faverolles, White
French Breeds
Game, Old English Spangled Cock
Game, Old English (Cock and Hen)
Hamburghs, Gold and Silver Spangled
Hamburghs, Silver Spangled
Houdans
Indian Game
Langshans, Croad
La Bresse
Leghorns, Brown
Leghorns, Gold and Silver Duckwing
Leghorns, White
Leghorns, Blue
Leghorns, Piles, Cuckoos, Duckwings
Minorcas, Black
Mincoras, Black and White
Orpingtons, Black
Orpingtons, Buff
Orpingtons, Jubilee and Spangled
Orpingtons, Spangled
Orpingtons, White
Orpington, White (Points of a)
Red Malays, White Aseels
Rhode Island Reds (S. Comb)
Rhode Island Reds (Rosecomb)
Rocks, Buff
Rocks, Barred Plymouth
Sussex (all varieties)
Sussex, Speckled
Turkeys, White
Wyandotte, Silver Laced Cock
Wyandottes, Partridge, Buff and Blue Laced
Wyandottes, Partridge
Wyandotte, Silver Pencilled and Columbian
Wyandottes, Silver Laced (Cock and Hen)
Wyandotte, Silver Pencilled
Wyandottes, Black
Wyandottes, Blue
Wyandottes, White
Wyandotte, White (Points of a)
Yokohamas, Scotch Grey, etc.
Yokohamas, White (Cock)

Six Laying Breeds and Eggs.

Price 2d. each, packed in card tube, or 1/6 per doz. post free, packed flat.

Address Publisher "Poultry World," 154, Fleet St., London, E.C.

Practical Books

For Poultry Keepers.

"AMATEUR POULTRY KEEPING." By the Editor of the "Poultry World," The back yard poultry keepers' practical guide as to the best and most up-to-date methods of making a few fowls pay in a small space. Price 3d. post free 3½d.

"AN INCOME FROM BACKYARD FOWLS." By W. Powell-Owen (assistant Editor of "The Poultry World"). The working man's *vademecum*, showing how it is possible for the average working man to add considerably to his income by keeping fowls in a backyard run. This splendid handbook contains over 35,000 words, comprising the most practical instruction on this highly-interesting subject, and is acknowledged by all readers to be the best ever issued on the keeping of fowls in confined spaces. Price 6d., post free 7d.

"EGG INCUBATION." By J. M. Blackwood. An invaluable treatise on Natural and Artificial Incubation, dealing thoroughly with all sides of this most important phase of poultry culture. The natural side of the subject is dealt with by fullest information anent the setting, feeding and management of the broody hen, etc.; and the artificial by the latest and most up-to-date instructions as to choosing, management and working of incubators, foster-mothers, etc. It explains in detail the moisture, heating and ventilation questions relative to same. A thoroughly reliable, up-to-date and practical enquire-within for amateur and professional alike. Price 6d., post free 7d.

"HAMBURGHS IN A NUTSHELL." By the Rev. J. N. Williams, B.A. (Hon. Sec. and Club Judge to the Hamburgh Club). A scientific guide to the selecting, mating, exhibiting, and management of all colours of the Hamburgh. It deals fully with the best method of producing prize-winning Cockerels and Pullets, how to prepare them for Shows, and includes in a compact and concise manner all information that is necessary for a successful Hamburgh breeder to know. Price 6d., post free 7d.

"HEN, THE." A scientific and pictorial treatise including two instructive dissectible models of the hen and egg in coloured plates. This striking and novel work deals with every part of the anatomy of the domestic hen, and shows the process of evolution with the egg from the earliest stage to the hatching of the chick. Other items of work are the comprehensive glossary of technical, etc., terms. Breeds and how to tell them. Poultry keeping that pays, etc. New edition just, printed. 2s. 6d. post free.

PRACTICAL BOOKS—continued.

" HOW TO MAKE MONEY FROM POULTRY." By W. Powell-Owen (assistant Editor of " The Poultry World ") is one of our latest handbooks and comprises no fewer than 130 pages for 6d. It is a practical suited to all classes of poultry keepers and can be read with pleasure and profit. It deals with all phases of the Poultry Cult. Fowls, Ducks, Geese, Turkeys, Bantams, etc. Poultry keeping in towns, Poultry farming, Ailments, Feeding, Fattening fowls for market, Day old Chicks and Duckling business, Egg preservation. Full of timely Hints ; in fact it is one of the cheapest and most comprehensive works published. Price 6d., post free 7d.

" MODERN WYANDOTTES." By A. E. Ellett. This latest and most useful handbook treats of best and most modern methods of breeding, keeping, and showing of all the different varieties of " Wyandottes." It contains two coloured plates and numerous black and white illustrations of prize-winning specimens. Price, paper cover, 1s. 6d. post free ; without plates, 1s., post free 1s. 2d. ; cloth 2s. 6d.

" REARING CHICKENS, DUCKLINGS, TURKEYS AND GOSLINGS." By Will Hooley. A handbook of the greatest value to all breeders of poultry desirous of raising strong, healthy stock. Mr. Hooley (" Poultry World " Expert-in-chief) gives fullest and most practical information on this subject in the manner that it can be understood by all. Price 3d., post free, 3½d.

" RHODE ISLAND RED, THE." By George Scott, Hon. Sec., British Rhode Island Red Club. Illustrated. The only work of its kind dealing exclusively with this variety—the " Breed of the Moment." The author treats fully on the origin and history of the breed ; the R.I.R. as a utility fowl, also as an exhibition fowl. He also deals thoroughly with both the " general management " and "mating " of the breed, giving, too, in a complete form, the standard of perfection for both male and female. Indeed, a well-written book for all lovers of the " Red." Price 6d., post free, 7d.

" POULTRY APPLIANCES " and how to make them. By L. B. Collier. A practical guide as to the making of all the various appliances used in poultry keeping, from a nest box to a poultry house. Profusely illustrated with descriptive sketches and thoroughly up- to-date in every respect. Price 6d., post free, 7d.

" POULTRY FOR BEGINNERS." By the Rev. J. N. Williams, B.A., etc. A treatise of unequalled value for beginners in the art of poultry keeping. The writer gives in it the most practical instructions on how to commence keeping poultry, in large or small numbers, for both show and utility purposes, and moreover, gives the reasons why these instructions should be followed out. Price 6d., post free, 7d.

" POULTRY WORLD ACCOUNT BOOK." Designed by Will Hooley. The very simplest, cheapest and most practical account book for utility and fancy poultry breeders. This account book is designed on absolutely new and original lines. Each book provides a straightforward financial record of an entire year's work. Start one in the present month and it will last for 12 solid months from date. Stiff cloth cover, price 1s., post free 1s. 1d.

No matter if you keep

POULTRY for

Pleasure! Prizes!!

or Profit!!!

you will find

The Poultry World Annual

the Key to the Best in the Poultry World. The literary sensation of modern times. Poultry Breeders, Fanciers, Hobbyists and Backyarders will find therein a compendium of information absolutely indispensable to them.

Quality always tells, and this is why **POULTRY WORLD ANNUAL** has always carried the warmest praise from all its subscribers. The quality and quantity of reading matter therein surpass all other matter ever brought together between two covers, or in any reference book on the subject, for the modest price of ONE SHILLING. It is the finest work of reference ever offered to Poultry-Keepers. It is in a class by itself. No other book or similar publication comes within gunshot of it. Simply invaluable, and tells you all you wish to know in handy form at a moment's notice.

No Poultry-Keeper's Library

is complete without a copy of **POULTRY WORLD ANNUAL.** Procure a copy of this marvellous hand-book, price 1/-, of all newsagents and bookstalls, or 1/4 post free, from:—

F. CARL, The Poultry Press, Ltd.,

154, FLEET STREET, LONDON, E.C.